The American City

JANUARY 1955

Front row: *(left to right):* CLARENCE H. ELLIOTT, *Kalamazoo, Mich.*, ROBERT W. FLACK, *Durham, N. C., members of Executive Board;* ROSS E. WINDOM, *St. Petersburg, Fla., newly elected ICMA President;* GEORGE E. BEAM, *Peoria, Ill., member of Executive Board and Former ICMA President;* CLARENCE E. RIDLEY, *Executive Director of ICMA.*

Second row: J. R. FRENCH, *Verdun, Que.*, LEONARD G. HOWELL, *Des Moines, Iowa, members of Executive Board;* ELDER GUNTER, *University City, Mo.*, E. J. ALLISON, *Ogden, Utah*, J. H. WIGGLESWORTH, *Lawrence, Kans.*, H. M. CRANE, *LaGrange, Ga., newly elected Vice Presidents.*

Third row: HAROLD R. CHEEK, *Springfield, Ohio*, JACK MAYNARD, *Ashland, Ky.*, WALTER E. SEAHOLM, *Austin, Texas, and* W. K. WILLMAN, *Pontiac, Mich., outgoing Vice Presidents;* JAMES F. SHURTLEFF, *Medford, Mass., newly elected Vice President;* SAMUEL E. VICKERS, *Long Beach, Calif., outgoing Vice President.*

Newly elected officers of the International City Managers' Association

are shown with outgoing officers at the annual ICMA conference, held December 5-8, 1954, at St. Petersburg, Fla.

See story on Page 19

Smoothing the way

for Philadelphia's heavy waterfront traffic

The old, uneven block pavement on Delaware Avenue was hard on vehicles and drivers alike.

Now traffic rolls smoothly over this resilient, rugged Texaco Asphalt pavement.

Few city thoroughfares carry traffic equal in volume and weight to that served by Philadelphia's Delaware Avenue. It is the main artery for the movement of freight to and from the numerous docks of this busy port.

Last year, Philadelphia completed the first portion of a 7-year program of resurfacing the rough stone block pavement on 150-foot wide Delaware Avenue. A resilient, heavy-duty Texaco Asphalt pavement of the plant-mixed type was constructed in two courses. Under the gruelling traffic of such thoroughfares as this, Texaco Asphalt demonstrates very convincingly its ability to absorb heavy impact year after year, with a minimum of upkeep.

Whether your city needs heavy-duty paving for a traffic artery similar to Delaware Avenue, or a pavement suitable for less heavily traveled streets, there is a type of Texaco Asphalt construction exactly suited to your requirements and your budget. Helpful information concerning methods and materials employed in all of these types is presented in two booklets, which interested city officials can secure without obligation by writing our nearest office.

Contractor
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Philadelphia

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17
Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Minneapolis 3 Philadelphia 2 Richmond 19

TEXACO

TEXACO ASPHALT

JANUARY 1955

The American City

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Things To Come
In Sewage Treatment

Realistic Refuse Disposal

It is certainly encouraging for

Mrs. Donald Cummings, Jr., and her young son Donald

"I WASN'T ALONE ANY MORE"

Most of us know what it is like to have a telephone. But have you ever thought what it would be like if it wasn't there, even for a little while?

Here are some good words along that line from Mrs. Donald Cummings, Jr.

"When we moved into our new house," she told us a few weeks ago, "I felt a little strange—with a young baby and all—and I couldn't seem to get a feeling of being settled and at home.

"Then the telephone was put in. And suddenly everything seemed different. I could call people! I felt better about being by myself in the house with the baby. I felt better about my mother who had been ill in Boston. And about my husband in uniform far away.

"And then I realized that it wasn't just the telephone calls I could make—it was that people could call me if necessary. I wasn't alone any more."

BELL TELEPHONE SYSTEM

Reminding you that someone, somewhere, would like to hear your voice today.

Things To Come In Sewage Treatment

The article in the December 1954 issue of THE AMERICAN CITY, entitled: "Highway to Health," provides functional design data on an impressive array of modern mechanized sewage-treatment facilities. These 22 treatment plants serve a design population of 674,000 people. Over half of the cities served are in the 20,000 to 50,000 population range; two in the 50,000 to 100,000 range, namely Salinas (75,000) and San Mateo (100,000); only four have a design population of 10,000 or less.

High-rate filtration is reported for 11 plants, five of which are two-stage type. Nine plants employ primary treatment only. Essentially all employ digestion. Some repetitive features of interest are the following:

1. Use of vacuum flotation as a primary step of process — 4 plants
2. Effluent reclamation — 9 plants
3. Sludge grit washing — 2 plants
4. Control house constructed over primary clarifier—5 plants
5. Power generation from sludge gas—2 plants.

Of outstanding note is the practice of effluent reclamation. The widespread use of effluent reclamation in this area is a forerunner of things to come in the sanitary engineering field. Other instances can be found in ever-increasing numbers throughout the country where waste-water treatment for re-use is becoming the order of the day.

It is pertinent that of the nine plants reported by Mr. Jenks as practicing effluent reclamation, that five of these thus provide irrigation water for crops, one for irrigation of

a golf course, and three for wash-up and irrigation purposes at the sewage-treatment plant. Two plants use the reclaimed effluent for operating water for chlorination purposes. All of the plants engaged in reclamation procedures employ secondary biological oxidation units.

An outstanding example of reclamation of sewage effluent to be found in the eastern part of the country is the practice at the Back River Sewage Treatment Works of Baltimore where some 2 mgd of trickling-filter effluent is chemically treated for use at the Bethlehem Steel Company plant at Sparrows Point, Maryland. Another is the re-use of canning waste flow for crop irrigation in New Jersey.

If sanitary engineers can achieve the universal practice of returning to the soil, in a sanitary manner, the spent water supply of the community with its bounty of mineral and organic constituents then we can perhaps approximate nature's economy.

JOHN BAFFA
Consulting Engineer
New York, N. Y.

Realistic Refuse Disposal

It is certainly encouraging for those of us in the refuse and sanitation field to observe the tremendous strides Philadelphia is taking in solving its problems of refuse disposal ["Philadelphia Douses Its Dumps," November 1954, p. 68].

The thoughtful engineering methods used to study and analyze the over-all problem and the realistic and sound approach in solving it should serve as an excellent example for other commmunities facing the dilemma of refuse disposal. Mr. Bailey's article serves as a sound outline for doing the job:

1. Analyze the problem
   a. Total amount of refuse to be handled
   b. Locate areas of production
2. Selection of method of disposal
3. Selection of sites for new incinerators
4. Evaluation of existing facilities
5. Design of properly equipped units for disposal.

RALPH C. TAYLOR
Superintendent of Waste Collection Division, Cincinnati, Ohio

For a Wise Union of Private and Public Effort

The new organization whose initials spell ACTION—the American Council to Improve Our Neighborhoods — the birth of which was reported in your December issue (page 23), has great possibilities for stimulating the improvement of living conditions in cities large and small throughout the United States.

But the heavy emphasis on re-

THE AMERICAN CITY

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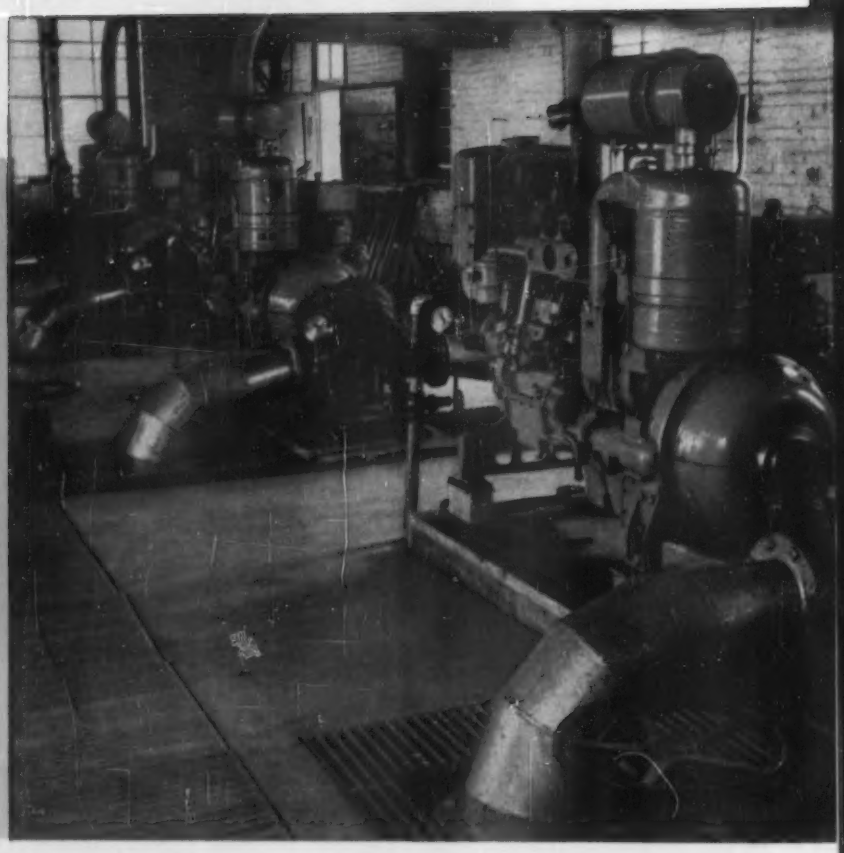
MAIL BAG (continued)

People sleep soundly in Pueblo



. . . thanks to CAT* standby power

Pueblo, Colorado, may need power in a hurry some day. If it does, nobody's worrying about the water supply. That's protected by the most reliable standby power available—Caterpillar power. Three D337 Engines, in the Public Water Works plant, District No. 2, are ready to swing into action to keep the 2350-gallon-per-minute 8″ x 8″ pumps running!

Why did Pueblo install Caterpillar Diesels? Here's the answer from Superintendent Fred B. Dunlap: "We had evidence of Caterpillar dependability in our D2 Tractor, which we've used for a long time. And the D337s fitted our specifications exactly, so we bought them."

Performance records in municipal plants all over the country back up Mr. Dunlap's judgment. Besides reliability, these rugged yellow units offer many other advantages. For example: Easy, low-cost installation. They take up little space and don't require big concrete bases or expensive wall or overhead construction. Easy to operate and maintain, they don't need the attention of high-salaried personnel. And they burn low-cost No. 2 furnace oil without fouling—another saving. What's more, they're *honestly* rated. The power they promise in the specification sheets is the working power you can count on in your plant!

What are your needs? You'll find exactly the right unit, or combination of units, in the Caterpillar line —engines and electric sets in 12 sizes up to 500 HP and 315 KW. Your local Caterpillar Dealer is a source of prompt service any time of the day or night. Ask him to show you proof of performance!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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CAT POWER MEANS DEPENDABLE PERFORMANCE

MAIL BAG *(continued)*

(See also "More Letters to The Editor," pages 148, 149)

habilitation in ACTION's program needs watching, lest there may be over-emphasis on the importance of mere fix-up campaigns.

Effective urban renewal means both conservation and redevelopment, and any attempt to modernize structures in areas that require complete rebuilding is a waste — not a saving — of private and public funds. Organizations concerned with housing betterment must be on their guard, therefore, against the serious danger that over-enthusiastic proponents of neighborhood conservation may attempt to use the movement to prevent its proper union with genuine slum clearance and the construction of public low-rent housing where urgently needed.

WILLIAM CHARNEY VLADECK
President
Citizens' Housing and Planning Council of New York, Inc.

Parking Meters in Lorain, Ohio

The City of Lorain purchased 365 parking meters in February 1942; 75 meters in April 1947; 363 meters in July 1947; 100 meters in October 1953, and 550 meters in 1954. However, there were some conversions and trade-ins of old meters.

During 1954 the City of Lorain had a Mortgage Revenue Parking System Bond Issue in the amount of $320,000, the proceeds of which were used to purchase property ($245,368.96), new meters, and for incidental expenses for municipally owned parking lots, which are now in operation.

The total receipts for 1953 amounted to $45,743.56 from approximately 725 meters, all on-street. In October 1954 there were 334 off-street meters and revenue received during October amounted to $870.05. In October 1954 the total receipts amounted to $4,651.22, and for a like period in October 1953 amounted to $3,911.60. The total number of meters in operation in October 1954 was 1,110. They are Dual meters, Duncan Miller, and Automaton meters.

JOSEPH J. MITOCK
City Auditor
Lorain, Ohio

Right Buying of Municipal Uniforms

It is our feeling that much good can be accomplished on behalf of the purchasing agents of municipalities by such articles as the one on Uniforms which appeared on page 103 of THE AMERICAN CITY for December 1954.

There are two major points which the writer should like to suggest for your consideration.

First, I believe that the placing of orders by police and fire departments is delayed entirely too long for the manufacturer to be able to give reasonable delivery and in time for wear for the complete season. It is suggested that inspection of uniforms be made when the fall uniforms are put away and again when the spring uniforms are put away. By making inspection at those times, the approximate number of garments that will be needed for the next season could be ascertained.

When the approximate yardage needed is known, the mill, whose cloths are specified, could be so advised and then have the goods ready for delivery to the successful bidder. If the police departments would then place their orders during the month of July or August, a reasonably decent delivery could be expected. However, in a great many cases today, when the orders are placed, the goods are not available at the mill, which of necessity lengthens the time of delivery.

The second suggestion is that a department does a disservice to itself when it specifies a certain mill style and then in the specifications adds "or equal." It is certainly unreasonable to expect that a purchasing agent have sufficient technical knowledge of fabrics to be able to determine if the "or equal" fabric submitted is comparable to the particular cloth specified by the purchasing agent.

Perhaps the International Association of Chiefs of Police can afford the appointment of a uniform committee to visit uniform plants in various areas. They could ascertain which manufacturers have their own factories and which farm out their work to contractors.

Without having some knowledge of the construction in garments, inner vitals used, and the tailoring put into a garment, a purchasing agent cannot know if he is securing the greatest value for his money by accepting the lowest bid. Certainly, a community never advertises for automobiles and considers a quotation on the Chevrolet in the same class as one submitted on the Cadillac—there is a comparable difference in both civilian and uniform garments.

Many cities have been using the same specifications for uniforms for years without any revisions. Due to change in manufacturing technique, as well as changes in trimmings during recent years, it is recommended that the city purchasing department refer the specifications to a reputable manufacturer and ask for suggestions on changes in the tailoring and in the trimmings used.

WARREN J. HELDMAN, *President*
The Fechheimer Bros. Co.
Cincinnati, Ohio

Who Wants to Install a Golf Course for Coronado?

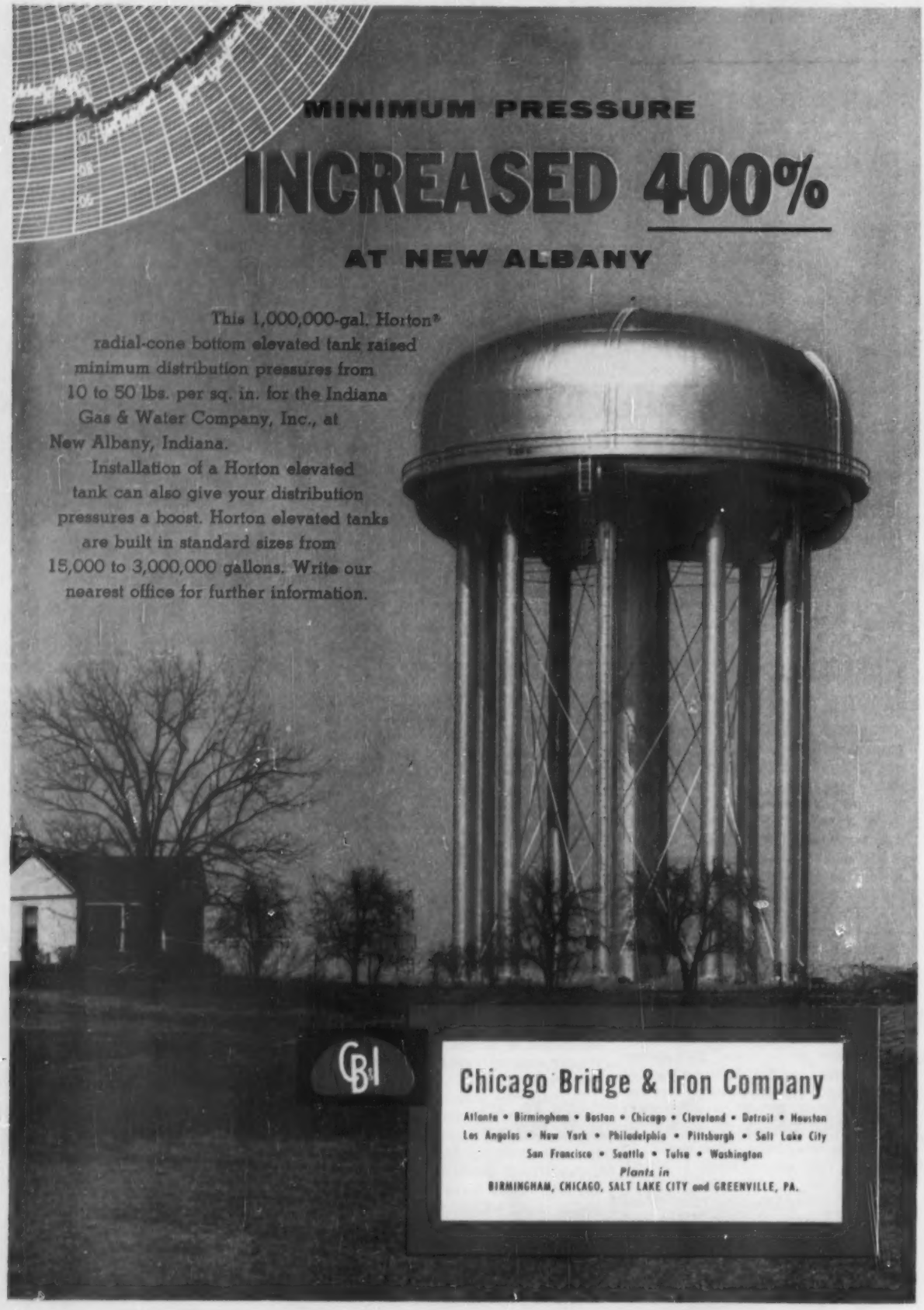
The Coronado City Council has requested the City Manager's office to enlist your aid in locating persons who might be interested in submitting to the City of Coronado a proposal to install a Golf Course.

General information is as follows:

1. The City of Coronado owns 236.3 acres of land on the Silver Strand within the city limits, and four miles from the center of the city. The city desires installation of an 18-hole professional type golf course on this property. Also, the city wishes to retain ownership of this property, and invites persons who are interested to construct golf facilities on a long-term lease basis.
2. Water is located along the western property line.
3. A new 4-lane freeway is being built adjacent to the western line of the property connecting Coronado with the San Diego metropolitan area.
4. Adjacent to the eastern shore of the property is an area suited for yachts and all types of boating. This water area is under the control of the City of Coronado as submerged lands.
5. Coronado has a population of 17,171, and is located in an area suited to play golf the year around. There are no other golfing facilities in the immediate vicinity, the nearest golf course being Chula Vista, which is approximately 15 miles from Coronado, and is a private course. At times during week-ends there is a waiting period up to two hours to play.

All communications regarding the property should be addressed to the undersigned:

M. W. SLANKARD
City Manager
Coronado, Calif.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This 1,000,000-gal. Horton* radial-cone bottom elevated tank raised minimum distribution pressures from 10 to 50 lbs. per sq. in. for the Indiana Gas & Water Company, Inc., at New Albany, Indiana.
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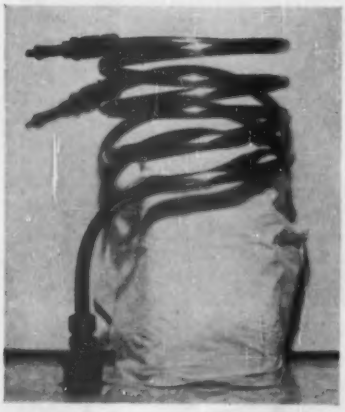
Water Supply and Treatment

Demon Water Hammer

. . . and how to reform it



This 5-foot coil of air-filled copper pipe corrects water hammer in domestic and small industrial installations. Note—the air valve fitted for a standard fire pump.

DEMONS aren't easy to reform, nor is water hammer easy to eliminate from a municipal water-works system. Nevertheless, the water-works man has certain tools at his command that help to tame this "demon" and avert the catastrophe of broken mains and damaged plant-pumping equipment. Such seemed to be the consensus of the water-works men discussing this problem at the recent meeting of the New York Section of the American Water Works Association. The discussion was led by Nelson Fuller, superintendent of water, Batavia, N. Y.

The phenomenon of water hammer, first brilliantly associated by the Russian Scientist Joukovsky (now out of Soviet favor), with the speed of sound in water and further developed into a working theory by him, occurs when a long line of pipe carrying water at considerable velocity is suddenly stopped by the closure of a valve—as it would be by a check valve. A dynamic pressure, in addition to the normal pressure, is created within the pipe by a very sudden transformation of the kinetic energy to pressure energy. This results in the creation of an acoustic type of wave which traverses the length of the pipeline at enormous velocity, generally around 3,300 feet per second, or four times faster than the fastest jet plane.

Estimating Velocity

Although difficult to measure on ordinary pressure gauges because of the rapidity of its travel, the velocity can be measured by specially actuated strip-type recorders and by electrical strain gauges. It can be roughly estimated by multiplying the known velocity before closure by 45 to 50 times.

One way to lessen the water hammer was described by David Gallagher, of the Worthington Corporation. The application of a fly-wheel to the shaft of the pump permits it to be slowed down gradually and thus cushions the surge. This method requires care in the selection of a shaft sized for the pump and, also, a high-torque motor to overcome the inertia of the fly wheel.

Another remedy suggested by Mr. Fuller is the use of a slow-closing hydraulic valve instead of a check valve on a pump. This permits the reversal of the pump and a backward rotation long enough to overcome water-hammer surge. However, Mr. Gallagher warned, this reverse speed must not be excessive or it will introduce serious problems in shafting and bolting and other appurtenances of construction.

Water hammer sometimes can be helpful, explained George Walker, of Simplex Valve and Meter Company. The most spectacular example of this occurred in Monterey, Mexico, when a long, thin-walled steel main collapsed because of the failure of the welds. When the welds were repaired, the Mexican engineers "bumped" the line back into shape by water hammer.

To reduce water hammer in large conduits, Thomas Wiggin, New York City consulting engineer, recommended the use of a cylindrical-type check valve that shuts slowly by electricity. Another handy method is to supply a bypass on the pump, or even to fix the check valve so that it will not close entirely, and let the pump run in reverse until a manual valve can be operated.

Hammer in Vertical Pumps

The problem of water hammer in vertical well pumps also proves troublesome. Arthur Luce, of the New York Water Service Corporation, stated that a small vertical tank with a float-control relief valve helps to minimize the hammer on a vertical turbine pump at a well with a lift of 50 feet. The tank is kept half full of water to produce an air cushion.

In the case of water hammer experienced in some homes, particularly those with ⅝-inch copper piping systems, the higher velocities cause a great deal of jarring of the water pipes. Mr. Fuller exhibited a modification of a coiled cushioning device developed by him which he has found to be very effective. A coiled length of copper pipe, of ½-inch outside diameter and about 5 feet to 8 feet in length, is placed near the water meter in the house or at a spot where the noise from the hammer is the loudest. An air inlet, like a tire valve, is placed at the end and the coil pumped full of air.

The idea that pressure surges of this type, but of lower intensity, are continually traversing a distribution system and are, in many instances, the cause of catastrophic breaks in the system—generally late at night—remain an ever-present danger was suggested by Mr. Fuller. He urged the use of the special recording-type gauges that would reveal weaknesses of this sort in the system and that would enable a superintendent to eliminate possible breaks.

MOIST FUEL CELLS

An important application of B-L unit-suspended walls and arches is found in furnaces where a fuel with a high moisture content is burned. Although designed primarily for use in cane sugar countries for bagasse burning, these furnaces have proven so successful in other fields such as the burning of bark and wet wood refuse.

BIGELOW-LIPTAK *Corporation*

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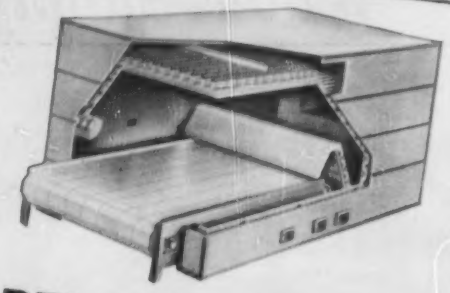

DRYER FURNACES

A tough assignment for a furnace is to stand up under the every-day beating of heat in drying applications. B-L's streamlined thin wall dryer furnace does it—cuts maintenance to boot. It furnishes heat for drying coal, sugar, salt, lumber, chemicals.

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4100

Refuse Collection & Disposal

Strip Mine Becomes a Sanitary Fill

(Above) Tulsa likes to use a big trench to conserve space in its fill. (Right) the bulldozer covers each day's contribution of refuse with a layer of stock-piled material. The excess is used for leveling the site and for access road construction.

IN Tulsa, Okla., we are gradually transforming an old coal strip-mining pit into a giant-sized sanitary fill. The strip-mining excavations range in depth from 30 feet to 60 feet, and the entire sanitary fill operation is geared to filling these pits in a single lift. The city would have preferred to build smaller fills close to the outskirts of town, but the need for reclamation of these strip-mining areas, plus their availability and the lack of better sites, has forced us to confine our work here.

We use a Northwest dragline and excavate only into the disturbed earth. Fortunately, no water problem complicates the job. The dragline opens a trench approximately 25 feet deep and 20 feet wide, allowing space for the tractors to turn around. We use either Caterpillar D7's or International TD18's for the work.

Our trucks then dump directly into the large trench, and the tractors proceed to compact the refuse to a dense mass. Later, the tractors bulldoze a cover of excavated earth. In four years, the fill has received 150 tons of refuse per day to reclaim 7 acres of land.

The work is self-supporting, financed by a refuse-collection service charge made to each customer. Single-family residences are charged $1.50 per month and receive twice-weekly service; large accounts and business firms are charged $6.50 per month for each 30-gallon container serviced daily.

R. W. Ingalls
Superintendent of Refuse
Tulsa, Okla.

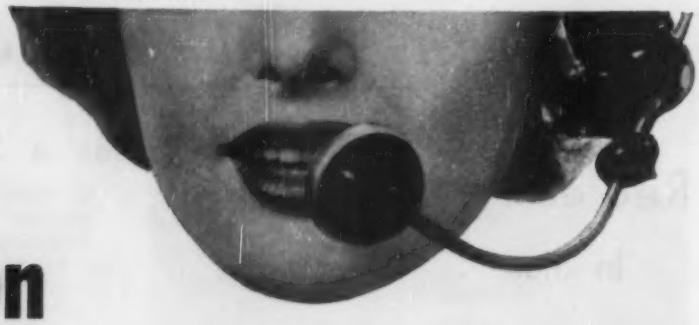
Two Types of Trucks Needed In Youngstown

WHEN Mayor Frank X. Kryzen, of Youngstown, Ohio, replaced privately operated refuse collection with city-operated service, Commissioner of Engineering James C. Ryan selected two types of refuse-collection bodies for his new seven-truck fleet.

Because of the Youngstown incinerator's unusually low ceiling, conventional dump-body type of trucks cannot lift the bodies. Therefore, Mr. Ryan selected Packavans, made by the Brown Truck and Trailer Company, of Charlotte, N. C., mounted on GMC truck chassis. These bodies have movable bulkheads traveling from the cab end of the body to the rear to compact as well as discharge the loads. These units have been assigned to the collection of burnable refuse only.

For the balance of the work, the city uses two Roto-Pac escalator-type trucks that load continuously. These are made by City Tank Company, of Long Island City, N. Y., and will be used to collect ashes, cans, bottles, and other noncombustible rubbish that can be delivered directly to a dumping site outside the city.

Some of the new 16-yard trucks that mark a forward step in Youngstown sanitation.



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Parks & Playgrounds

Edited by JOSEPH PRENDERGAST, Executive Director, National Recreation Association

Recreation—

In Slum Clearance and Urban Redevelopment Programs

SPECIAL attention of municipal recreation officials was focused on the new provisions of the Housing Act of 1954 at one of the section meetings of the recent National Recreation Congress. P. E. Middleton, Acting Chief, Planning and Engineering Branch, Division of Slum Clearance and Urban Redevelopment, Housing and Home Finance Agency, told delegates that changes in the Act now made possible unusual opportunities for the expansion and realization of recreation objectives in congested and deteriorated portions of cities.

An example of how a redevelopment program was used to develop new playground areas is shown in these before and after photographs of the one-half acre Wissohickon Recreation Center, which opened in Philadelphia, Pa., this past spring.

Although a few municipalities developed park and recreation areas as part of their redevelopment plans under the Housing Act of 1949, no funds were provided under federal contracts. Parks and playgrounds were eligible to be considered only as part of the local contribution to the total project cost.

Under the new Act, parks and playgrounds become a direct project undertaking which may be financed from funds made available through the federal government. As much as two-thirds of the cost of such developments may be met with federal money.

Other changes in the Act provide that if as much as 80% of the total benefit of a park, playground, or other public building or other facility will go to the project, the total cost of the improvement may be included in the gross project cost. If the benefit to the project is less than 80% the cost of the improvement must be prorated and only that percentage of its total benefit which would accrue to the project as compared to other areas would be included in the gross project cost.

The new urban renewal program will normally be concerned with much larger areas than was the case with respect to slum clearance and urban redevelopment under the Housing Act of 1949. Whole neighborhoods will be involved. Total planning for the neighborhood is essential under the Act. Recreation officials were urged at the National Recreation Congress to take the initiative in contacting planning officials and the local agency responsible for slum clearance and urban renewal.

In emphasizing the importance of action now, Mr. Middleton said that "many parts of otherwise sound and savable neighborhoods are deteriorating because adequate family life is really not possible in them, due to the lack of needed public facilities, including parks and recreation areas. We are convinced that the provision of adequate parks and playgrounds properly located and designed will contribute much in turning the tide of deterioration and obsolescence in essentially sound areas which should continue in residential use."

City, Park, School Cooperation Urged

FINDINGS of a six-month study of public recreation needs in Peoria, Ill., were presented recently to the city's Recreation Commission by a special committee of the Community Council. The study, which was initiated by the school board to study cooperative planning between the city, park, and school authorities, resulted in a 40-page report with nine recommendations for expansion of public recreation.

Four of the nine recommendations were concerned with the acquisition of new areas and facilities. Three other points dealt with the expansion of program services including an after-school play program and night center activities. The final point urged the city Recreation Commission to take steps to present the report to public and private agencies concerned.

Based on standards of the National Recreation Association, Peoria's provisions for recreation were found by the 120-member committee to be inadequate. Thirty-five additional tennis courts, six additional softball diamonds, eight additional baseball diamonds, and more swimming facilities were urged. More neighborhood playgrounds and playfields cooperatively arranged between the Park Board and the Recreation Commission were said to be needed.

One of the nine recommendations called for joint meetings between the Peoria Housing Authority and the Recreation Commission to determine the amount of service to be supplied to housing tenants by the commission. It was pointed out that the Authority makes a payment in lieu of taxes and that the tenants were, therefore, entitled to recreation services.

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Public Safety

Crimes Cut 50 Per Cent in New York City's Harlem District

CRIME in New York City in the first six months of 1954 increased 11% over the first half of 1953, Police Commissioner Francis W. H. Adams reported on August 1, and gave a shortage of 7,000 policemen as the cause. To prove it, Operation 25 was established by which a square mile of Harlem—25th Precinct—was brought up to ideal strength by assigning to that area the entire class of 250 recruits graduating from the Police Academy. The old straight post was re-established by which the foot patrolman can see the whole of his post from any point on it at any time.

In the 10 weeks from September 1 to November 15, major crime dropped 50% in this precinct — and increased elsewhere in the city and in the nation. The very convincing figures of the number of crimes in this precinct in the 10-weeks periods of 1954 and 1953 are presented in the table at the right.

	10 Weeks		
	1953	1954	% Decrease
Robberies	113	33	71
Burglaries	246	116	54
Grand larceny	84	35	58
Auto theft	49	17	69
Felonious assault	109	86	22

She's a Fire-Radio Dispatcher

WHEN one of the 25,000 residents in King County (Seattle, Wash.) Fire District No. 4 is in trouble, from a broken water pipe and flooding, to a fire, he can get quick help from the District's dispatcher, Mrs. Olive Jorgensen. She calls the signals for three fire stations.

She does this from her bedroom at 625 E. 175th Street, Seattle. By means of buttons she can turn on loudspeakers in the homes of the fire chief and four assistant chiefs and control the traffic signal on a major road to give fire trucks priority to cross. With the Motorola "Quik-Call" she can sound sirens at four remote fire houses, to call out the volunteer firemen. If necessary, she can summon help from the neighboring Snohomish Fire Department whose radio channel she monitors. She also serves as dispatcher for the 11 mobile units in Districts 14 and 16 which do not have base station radios. "She really knows her job," says her boss, Fire Chief Clinton Maehl of No. 4. Her husband, James, is a volunteer fireman.

Realistic Fire Drill in Tucson

THE Tucson Fire Department under the direction of Chief J. H. Freeman and Training Officer L. F. Peterson, in observance of Fire Prevention Week, combined a training program for firemen with a public demonstration in fire fighting. The Mayor and the Council permitted use of the condemned, two-story, adobe City Hall Annex, built in 1880, for their demonstrations.

Actual conditions were simulated by setting intense fires in the building and allowing a considerable amount of pre-burn time before the firemen extinguished the blaze. The demonstrations and training on fire-fighting operations included hoselays, ventilation, ladder evolutions, advancing hose lines, use of the aerial ladder, descending ropes with life belts, and net jumps.

FRED F. JIACOLETTI
Administrative Assistant
Tucson, Ariz.

The use of a Browder quarter-fold life net was a feature of the Fire Prevention Week demonstration at Tucson, Ariz.

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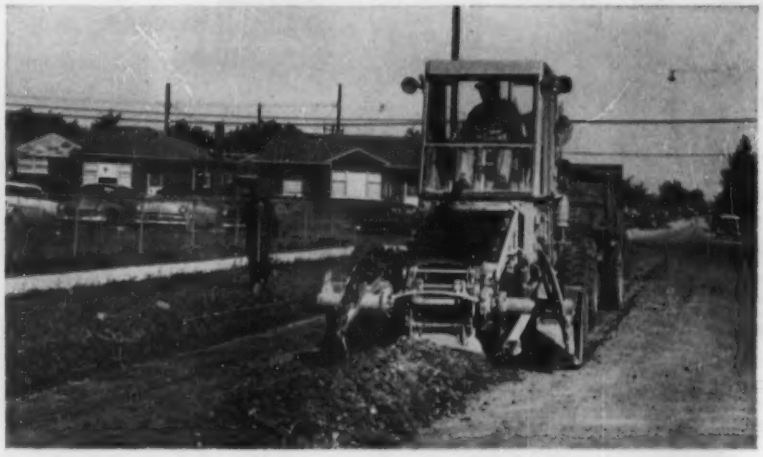

ALLEN PARK, Mich., cleans and regrades its unimproved streets quickly and easily by assigning a grader and a mechanical loader to the task. The loader that is used to pick up the windrowed material is an Athey TraveLoader that also is employed to pick up snow and stockpiled gravel for street resurfacing.

Peoria Still Likes Its Soil Cement

All goes at full tilt as spreaders process soil and cement.

SOIL-CEMENT street construction still is chalking up a list of zeros in the maintenance-cost column after five years of continuous service in Peoria, Ill. Understandably, this is pleasing news to City Engineer Arnold Pfeiler.

Peoria's first experiment with soil cement was made on three city blocks in 1948 at a cost of $1.92 per square yard. Since then, the program has expanded with each year and the cost has risen to $2.50 per square yard. Neither sum includes the concrete curbs and gutters normally used with the soil cement.

Thus far, one contractor has built all the soil-cement streets in Peoria. Soil analyses show a need for 10% to 14% cement to be blended with the soil. The contractor uses three Seaman Pulvi-Mixers; a No. 112 motor grader, an HT4 shovel, a No. 30 tractor (27 years old and still performing well), a No. 22 tractor (17 years old)—all Caterpillar products; a Case wheel tractor with a scratcher and plow; two sheep's-foot rollers; a Hercules cement spreader; water and asphalt distributors; a Galion roller; a rubber-tired roller; and a Barber-Greene asphalt-finishing machine.

Most specifications require that soil-cement process on any project undertaken on any one day must be complete within six hours after the first application of water. Consequently, the contractor has to limit the project to the amount a crew can accomplish within this time limit.

Wingover Needed

CLEARING the roadway is not enough snow removal in Houlton, Maine. Winging back the windrow helps to make space for piling the snow that will fall during the next storm. A Caterpillar No. 12 diesel motor grader with a snow wing has been assigned to do this work.

This city servant gets all the tough jobs

The Caterpillar Diesel No. 212 Motor Grader is an "all-purpose" machine, and in the town of Flambeau, Wisconsin, they prove it. They're quick to tell you that conditions get tough up in their part of the country, especially in the winter, and here they handle every sort of road job—from turnpiking to culvert building—with their No. 212. In these pictures you see it casting up spoil from a ditch, then back-blading the material as fill for the road.

The CAT* Motor Grader—unlike any other—is built and serviced *entirely* by one organization. A simple, easy-to-shift transmission, designed especially for this model, moves the No. 212 from 2 m.p.h. for heavy work, through speeds for grading, scarifying and general maintenance, to 11.9 m.p.h. for light snow removal and travel. It back-blades at 2.8 m.p.h. And these speeds are matched with the No. 212's 50 HP and its 15,000 pounds.

Other features: the Caterpillar Motor Grader's tandem drive climbs better than any other type, backs across ditches smoothly, gets maximum traction by placing all four drive wheels directly beneath the weight of the engine. An engine, incidentally, that runs on fewer tax dollars, using low-cost No. 2 furnace oil without fouling.

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Street Construction & Maintenance

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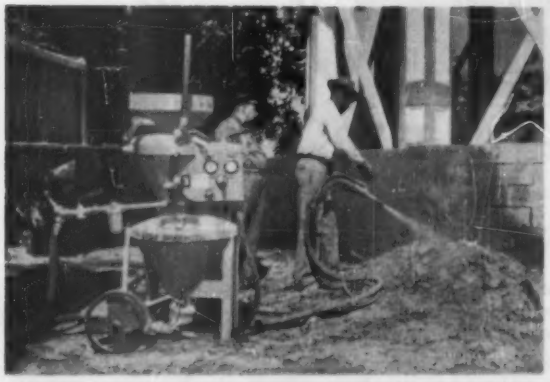

(Right) During the renovation program, workmen placed the dry wall quickly to support the 50-year-old Hampton Park Bandstand. A nozzleman (above) then covered the concrete blocks with air-placed concrete to ensure a stable foundation.

THE Department of Public Streets, Charleston, W. Va., dipped into its bag of maintenance tricks recently to renovate an old city landmark known as the Hampton Park Bandstand. This half-century-old structure is affectionately remembered in Charleston as the only building remaining from the South Carolina Inter-State and West Virginian Exposition of 1901.

To rebuild the foundation of the old structure, City Engineer Joseph Needle combined dry-wall construction with air placement of concrete. His crew placed the concrete blocks around the base of the structure, without a bed of mortar. Then they covered the dry wall with a shell of cement mortar "gunned" onto the surface of the blocks. This provided a smooth surface and bound the blocks into an extremely stable wall.

The equipment used for the air placement of the mortar was the Model 1250 Bondactor, made by the Air Placement Equipment Company of Kansas City, Mo. Dry sand and cement are placed in the hopper of the machine and are metered out under pressure through the nozzle. Separate streams of air mix with the mortar at the nozzle and the hydrated mixture is deposited on the surface instantly to form a dense, durable covering.

Mr. Needle reports that the city has used the Bondactor for many other projects in the city. His crews have used it to strengthen the flood wall along the river, to repair the city swimming pool, and to rehabilitate the pilings at the municipal yacht basin.

A Service Program for 705 Miles of Streets

THE 705 miles of city streets that Kansas City, Mo., uses don't present a problem from a mileage basis. But the age of the streets and the increasing amount of traffic that they carry do. Many of the city's streets are more than 50 years old; very few are less than 25.

To keep these streets in good shape, Director of Public Works Reed McKinley has organized a Street Repair Section and staffed it with 140 men. The section is comprised of six sidewalk crews; two cold-mix asphalt patching crews; one dirt-street crew; one light-and-barricade crew; one general repair crew; one concrete crew to resurface utility cuts.

Crew Duties

The dirt-street crew works continuously, placing a light surfacing on over 230 miles of streets and maintaining more than 300 miles of open ditches. The light-and-barricade crew is on duty 24 hours a day, maintaining lights or flares and barricades at all hazardous obstructions in the streets as well as similar warnings on dangerous buildings, construction work, or any street condition that is a menace to public safety.

This crew has been responsible for approximately 500 permanent barricades constructed of large ties encased in concrete, and for 50 stone retaining walls ranging from 5 feet to 20 feet in height and from 10 feet to 40 feet in length.

The Street Repair Section, during the past three years, has installed approximately 300 culverts ranging from 8 to 15 inches in diameter. In addition, it has been responsible for the construction of 37 permanent wood bridges varying from 10 feet to 30 feet in span.

It is charged with the upkeep and inspection of flood-protection structures, which includes 15 miles of floodwalls and levees. It is responsible for the repair of sidewalks and curbing in front of private property when this work is not accomplished by contract. Repair and construction of sidewalk radii on block corners is, in itself, an extensive program. It also has the heavy responsibility, during the winter, of spreading salt and sand to keep the streets from becoming very icy and treacherous after snowfalls, and thereby impede the city's flow of traffic.

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Sewerage and Sewage Treatment

Sewer Ditching Undercuts Street Trees

THE problem that has long confronted Nassau County, N. Y., has been to lay sewers along tree-lined streets without damaging the trees. The solution, it has been found, is to undercut the tree roots with a ladder-type ditching machine.

The sewer laying that is shown in the photograph at the right is in Baldwin; a Gar Wood Buckeye Model 407 ditcher is cutting the trench.

Solid Sewer Backfilling

(Above) The tractor eases sand backfill into place over the big storm drain. (Below) Next, the tractor covers the sand with earth, spreading it in thin layers for easy compaction.

WHEN San Fernando Valley, Calif., recently laid 3 miles of concrete pipe for storm draining, four Allis-Chalmers HD-5G tractors with tractor shovels were used to speed the job to completion. The pipe ranged from 84 inches to 94 inches in diameter.

The four units not only pushed sand backfill into the trench, but, by extending the buckets into the trench, pushed the material close to the pipe itself. Backfill was then placed around and over the big pipe by the tractor shovel to a depth of 36 inches. The equipment's weight passing over the fill smoothed and tamped it into a solid foundation to permit street paving.

Our Municipal Notebook

terns of land uses will be most suitable for the Rhode Island areas that are susceptible to hurricane and other storm damage. Since most of hurricane damage occurs along coastal areas as a result of high tides and floods, the surveys and planning studies will concentrate on the Rhode Island shore line and accompanying areas extending six miles inland.

Granting of the federal funds for the studies was made possible by the provisions of Title VII of the Housing Act of 1954. This section of the could be made a tourist attraction. The Genesee—with two waterfalls of more than 90 feet and with a magnificent gorge—has great natural beauty potential that has long been hidden and neglected.

The citizens' group urge spending relatively small sums of money over a five-year period, but they feel that the Genesee River should be given highest priority in community planning.

Federal Funds for Rhode Island Regional Planning

THE first grant of federal funds to be used to assist planning in metropolitan and regional areas has been made to the Rhode Island Development Council. The Council is to receive $16,000 from the Housing and Home Finance Agency. It will use this money to help finance a $32,000 study to find out what types and pat-

Rochester's Citizens Plan Riverfront Beautification

THE Citizens' Council for a Better Rochester and the Junior Chamber of Commerce of Rochester have combined forces to create beauty and usefulness by reclaiming the banks of the Genesee River.

Rochester's improved financial situation and the major construction projects now under way or being planned make it feasible to proceed with the beautification of the river along its entire passage through the city. The improvement of the riverfront areas would provide space for parking, public buildings, and new roadways, as well as for recreational areas for some of the city's oldest and most congested districts.

Also, with a reclaimed riverfront, Rochester's downtown business area Act is aimed at stimulating adequate planning in metropolitan and regional areas as well as in individual municipalities under 25,000 in population. Grants up to 50% of the total cost of planning work is permitted by the Act. Congress has appropriated $1,000,000 to finance such grants.

American Municipal Association Holds 31st Annual Conference

MAYORS and other municipal officials attending the 31st Annual Municipal Association Congress in Philadelphia last month heard General Lucius D. Clay announce that $26,000,000,000 had been scaled off President Eisenhower's original $50,000,000,000 plan for improving the nation's highways. General Clay, who is Chairman of the President's Advisory Committee on a National Highway Program, stated that careful study showed that $24,000,000,000 spent in the next 10 years would accomplish the job that needed to be

Newly elected president of the AMA—Mayor Allen C. Thompson, Jackson, Miss.

done immediately. A substantial portion of the funds are slated to be spent eliminating metropolitan area congestion. He also announced that the financing of the new improvements would be carried out primarily through the issuance of 30-year bonds.

During the business sessions of the conference, Allen C. Thompson, Mayor of Jackson, Miss., was elected President of AMA for the coming year; and Joseph S. Clark, Jr., Mayor of Philadelphia, Vice-President. Other official actions taken at the conference included passage of a policy statement calling on Congress to take a greater responsibility in civil defense. (See page 131 of this issue.)

In another official action the conference adopted a resolution petitioning Congress to authorize the construction of 200,000 low-rent public housing units in cities throughout the nation rather than the 35,000 that were authorized last year. Officials from west coast cities as well as some Midwestern areas tried to defeat this resolution, but were outvoted by mayors from the older eastern cities who desperately need public housing funds.

International Congress of Local Authorities

AT its XIIth Congress to be held in Rome, Italy, September 26 to October 1, 1955, the International Union of Local Authorities will discuss two main topics—"Local Government Finance and Its Importance to Local Autonomy," and "Culture Activities of Local Authorities."

Mayors, city managers, other municipal officials, and students of local government are invited to attend, and those planning to go should make reservations promptly. By joining the International Union of Local Authorities (through the American Committee for International Municipal Cooperation, 1313 E. 60th St., Chicago 37, Ill.), American municipalities will give their delegations official recognition and voting rights at the Congress.

Welfare Leaders Urge National Conference on Defense Problems

TO ASSIST the federal government in the development of a comprehensive policy and program with respect to "human problems created by the national defense effort, President Eisenhower has been urged to call a conference of leading citizens and government officials—federal, state, and local.

The proposal was made in a letter to the President from Louis B. Seltzer, editor of the *Cleveland Press* and Chairman of the Board of United

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THE CLAMP WITH CUTS!

Our Municipal Notebook (continued)

Community Defense Services, the federation of national nonprofit health and welfare organizations. The letter accompanied a 36-page report, "People and National Defense,"* which analyzes the federal government's responsibilities for the problems of social adjustment intensified by the national defense effort.

The report concludes that "the full contribution to the defense program of states, voluntary organizations and individual citizens cannot be mobilized until federal goals and policies are clarified."

* Obtainable at 35 cents from United Community Defense Services at 345 East 46th Street, New York 17, N. Y. See also "Civil Defense and Disaster Policy Adopted December 1, by AMA" page 131.

Public Bidding Law Amendment Urged

AMENDMENT of the General Municipal Law of the State of New York, to permit certain purchases without competitive public bidding, is being sought by a subcommittee of the New York State Conference of Mayors and Other Municipal Officials.

At a meeting of the committee held in New York on December 10, it was pointed out that mandatory acceptance of low bids on equipment often led to increased expenditure when it came to servicing and replacing apparatus which turned out to be nonstandard.

The group urged that the proposed amendment empower a local governing body, by a two-thirds vote, to waive the competitive bidding requirement when it is in "the best interest" of the community. It also urged that such governing bodies be freed of the requirement when a current delivered price is equal to or below that obtained by the State Division of Standards and Purchase.

Charles B. Bennett Joins Pereira & Luckman

FROM Los Angeles comes word of the resignation, effective January 1, of Charles B. Bennett, Director of Planning of that city for the last 13 years, and for 14 previous years Director of Planning of Milwaukee, Wis.

Mr. Bennett is joining the internationally known planning, architectural and engineering firm of Pereira & Luckman as an associate.

The Bridge with the Antiglare Panels

THE antiglare shields on the Raritan River Bridge on the Garden State Parkway in New Jersey were described in THE AMERICAN CITY for December 1954, on page 121. This bridge, the largest structure on the Garden State Parkway, was designed by D. B. Steinman, consulting engineer, of New York. C. H. Gronquist was project engineer in charge of design and supervision of construction of the superstructure. R. M. Boynton, for the substructure. Parsons, Brinckerhoff, Hall & Macdonald were general consultants to the New Jersey Highway Authority.

Oswego to Promote Port Development

THE city fathers of Oswego, N. Y. (1950 population 22,647), want to establish their city as "The Port of Central New York." Located on Lake Ontario, about 50 miles south of the headwaters of the St. Lawrence River, Oswego is believed by local officials to be in a favorite position to develop as a port city when construction of the St. Lawrence Seaway is completed.

To speed Oswego on its way toward the new goal, the city government's Common Council, the local Chamber of Commerce, and a newly organized industrial development company, titled, "Operation Oswego," have joined together to establish an office of Port and Industrial Director to induce shipping firms to increase the flow of water-borne traffic into the Port of Oswego.

The Port Director and his staff will also have the job of promoting Oswego as an outstanding location for new industry. A search is under way for a qualified man to take on the new position and to manage the $20,000 annual budget which has been allocated for the new office.

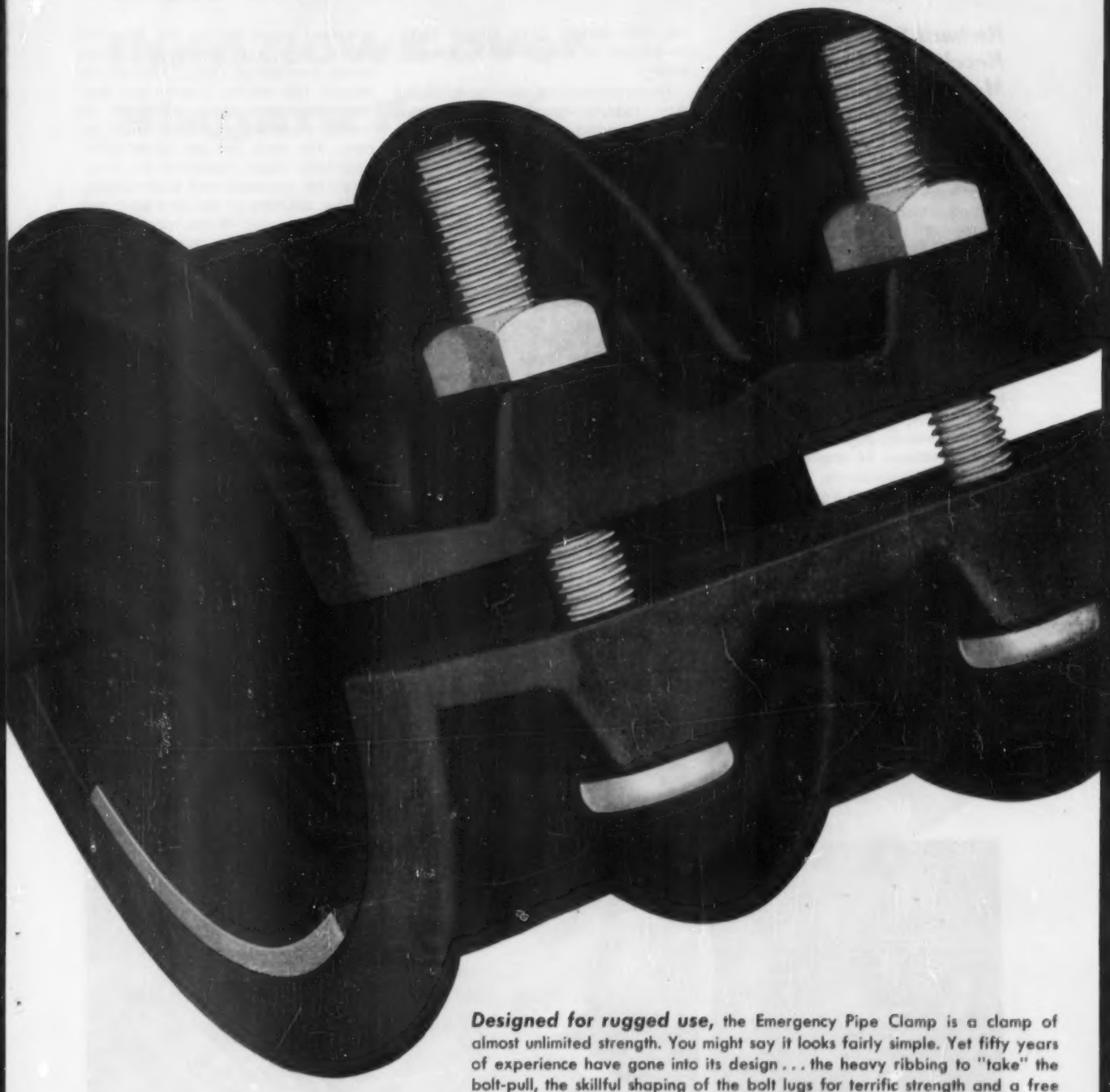
New Municipal Office—Assistant to the Citizens

A POSITION with a title believed to be unique in municipal administration has been created by R. W. Flack, City Manager of Durham, N. C. Entitled "Assistant to the Citizens," this post has been established to facilitate the furnishing of information desired by residents of Durham and personal contacts between them and the various divisions of the city government.

Appointed to the new position on November 15 was George Robert House, Jr., an assistant in the municipal Planning Department. In announcing the new step Mr. Flack said that Mr. House's office will be adjacent to his own and to that of the Planning Department. As "Assistant to the Citizens" Mr. House will have office hours from 9 a.m. to 11 a.m., and the rest of his time, if not needed for the new job, will continue to be available for the Planning Department's activities.

City Manager R. W. Flack (right) congratulates George R. House, Jr., on his appointment to Durham's newly created municipal position of Assistant to the Citizens.

THE CLAMP WITH GUTS!



Designed for rugged use, the Emergency Pipe Clamp is a clamp of almost unlimited strength. You might say it looks fairly simple. Yet fifty years of experience have gone into its design . . . the heavy ribbing to "take" the bolt-pull, the skillful shaping of the bolt lugs for terrific strength and a free wrench swing. The full length, massive hinge which no strain can loosen! The over-thickness of metal throughout to make child's play of any pressure! The glove-like fit . . . result of shaping each clamp over an accurate mandrel, pulling it down with a 12,000 pound air vice and sledging to complete snugness.

When you put on the Emergency Pipe Clamp, it is there to stay. Tens of thousands of them are still in place after 20, 30, 40 years' service. Made in C.I. and steel pipe sizes—½" to 12" inclusive.

Write for Catalog GW
M.B. SKINNER CO., South Bend 21, Ind.

SKINNER-SEAL EMERGENCY PIPE CLAMP

Richard S. Childs Receives La Guardia Memorial Award

AT the annual luncheon of the La Guardia Memorial Association held on December 11, Richard S. Childs, "father" of the Council-Manager form of muncipal government and chairman of the Executive Committee of the National Municipal League, became the 1954 recipient of the La Guardia Memorial Award for outstanding civic service.

Mr. Childs was selected for this honor upon the recommendation of a special panel consisting of deLesseps Morrison, Mayor of New Orleans; Paul G. Hoffman, Chairman, Studebaker-Packard Corporation; John Nuveen, Vice-president, National Municipal League; Mrs. Millicent McIntosh, President of Barnard College; Harold S. Buttenheim, Editor, THE AMERICAN CITY; and Newbold Morris, Chairman, La Guardia Memorial Association.

Fire Belt for Combustible Tokyo

AS the *Tokyo Municipal News* reports in its issue of November 1954, the destruction of the greater part of Tokyo by air-raids in World War II, resulted from the fact that the city was filled with highly inflammable wood frame houses. Attempts to make Tokyo fireproof, dating back to the Edo period, have proved futile on account of the poverty of the citizens.

In reconstructing the war-damaged city, today's municipal authorities again dreamed of making it fireproof, but again lack of funds made this impossible.

A Metropolitan Building Construction Law, enacted in 1952, provides for the construction of fireproof buildings so located as to make a fire-belt 11 meters wide along both sides of the main roads throughout the city. This fire-belt, to be subsidized by the Tokyo Metropolitan Government, will consist of fireproof buildings at least three stories high, which, it is hoped, will keep fires from spreading throughout the city.

Overdue Reform *

ANYONE who has had anything to do with elections must recognize the superiority of voting machines over the old paper ballot. Machines facilitate voting; they reduce errors of tabulation and eliminate the rejection of ballots for defacement; they are easy to recheck, and they reduce the time and cost of recounts. Yet in spite of these manifest advantages, 12 of New Jersey's 21 counties still hold out against voting machines.

The counties that cling to the obsolescent paper ballots are Atlantic, Salem, Cape May, Cumberland, Gloucester, Burlington, Ocean, Monmouth, Morris, Hunterdon, Warren and Sussex. Ostensibly their resistance to voting machines has been based on cost. Yet costs are not prohibitive, especially when measured in terms of public necessity and convenience.

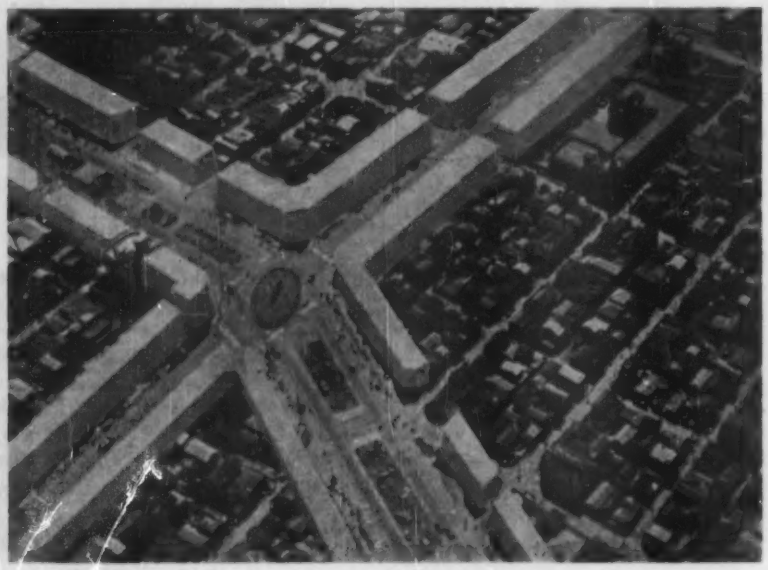
Now, spurred by the slow pace and uncertain status of the Case-Howell recount, Republicans have joined the move in the Legislature to make voting machines mandatory in all counties.

* From an editorial in the *Newark (N. J.) Evening News* for November 26, 1954.

Harvard's Graduate School Of Public Administration Offers Fellowships

HARVARD UNIVERSITY'S Graduate School of Public Administration has announced the availability for the 1955-1956 year of the Lucius N. Littauer Fellowships (intended for persons who have had considerable experience in the public service and who will continue in such service) and of the Administration Fellowships (for recent college graduates with some experience in the public service and with a distinguished record in their undergraduate work).

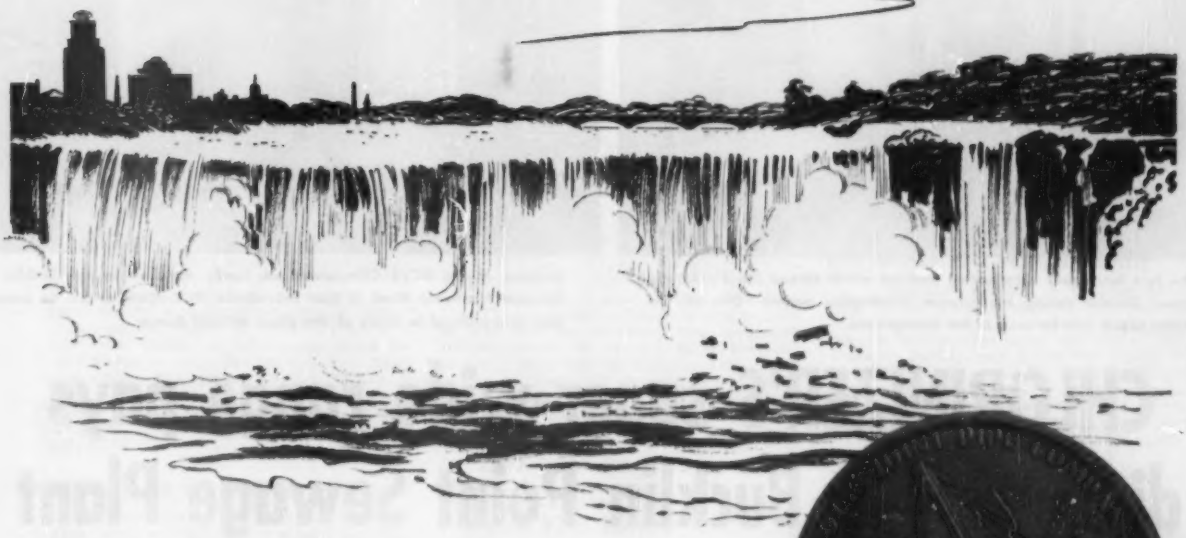
The Governing Boards of Harvard College voted to open the fellowships of the Graduate School of Public Administration to women who have had substantial administrative experience in the public service.



(Left) Exposed to danger from fire, such congested districts filled with small wood houses are prevalent in downtown section. (Right) A proposed system of fire protection using belts of fireproof buildings (shown with white walls) and wide avenues.

SKINNER-SEAL EMERGENCY PIPE CLAMP

580 times more water than flows over Niagara Falls!



IN 50 YEARS Lock Joint Pipe Company has developed and produced concrete pressure pipe for countless water works installations throughout the world. Today, at any given second of the day or night, these pipes are transporting better than 1,000,000,000 gallons of water — or more than 580 times as much water as is flowing over Niagara Falls.

This is the measure of the tremendous contribution Lock Joint Pipe has made, over the past half century, toward meeting one of civilization's most serious problems — water supply.

You may be sure that every resource of skill, experience and research at our command is at this very moment working on the answers to the even greater problems we must meet in the *next* 50 years!

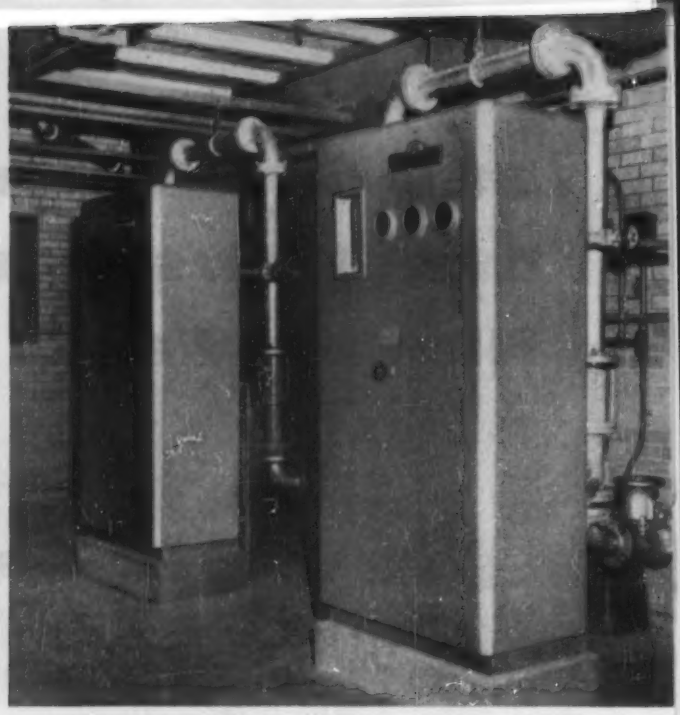
LOCK JOINT PIPE COMPANY

Established 1905

P. O. Box 269, East Orange, N. J.

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Mo.

One of the two temporary chlorinating stations which served the Blackstone Valley Sewer District during the interim disinfection period. One of the Builders Chlorinizers can be seen in the background.



Builders Model HCVS Chlorinizers as finally installed in the Bucklin Point Sewage Treatment Plant in East Providence, R. I. Control can be automatic and proportional to flows of the plant influent flumes.

CHLORINIZER'S super-wide range pays dividends at Bucklin Point Sewage Plant

Two Builders Chlorinizers were placed in service by the Blackstone Valley Sewer District Commission over a year and a half prior to the completion of their Bucklin Point Sewage Treatment Plant at East Providence, R. I. These Chlorinizers — Model HCVS — were factory-equipped for super-wide range feeding . . . from 100 to 6000 lbs. of chlorine per 24 hrs. without changing orifices or meter scales. An interim disinfection program was instituted which took care of all sewage and wastes flows collected by the new interceptor system RIGHT FROM ITS FIRST STAGES — and charges could be levied against industries and municipalities as they tied in. Later, these same Chlorinizers were installed in the finished plant where they are now serving. Blackstone Valley Sewer District Commission reports the Chlorinizers have given completely satisfactory service both during the interim period and now that the plant is in full operation.

Find out why the trend is to Chlorinizer . . . for replacement, for plant expansion, for new projects. Write today for Bulletins to Builders-Providence, Inc., 358 Harris Avenue, Providence 1, Rhode Island.

CLARENCE V. HICKEY, OPERATING ENGINEER, SAYS:
"We've put Builders Chlorinizers to the test and they have stood up very well. These Chlorinizers have given reliable service for the past three and a half years . . . maintenance has been negligible. We have had no chlorine 'ice' troubles in cold weather and the Chlorinizers have been oder-free in operation."

BUILDERS-PROVIDENCE
DIVISION OF B-I-F INDUSTRIES, INC.
BUILDERS IRON FOUNDRY • PROPORTIONEERS, INC. • OMEGA MACHINE CO.
BIF METERS FEEDERS CONTROLS

Get What You Want—No Charge!

To obtain any of the following catalogs, write directly to the manufacturers. If you prefer, you may circle the identifying numbers on this coupon and mail to THE AMERICAN CITY, *470 Fourth Avenue, New York 16, New York, or use the colored Post Card at page 210.* 1/55

499	505	511	517	523	529	535	541	547	553	559	565
500	506	512	518	524	530	536	542	548	554	560	566
501	507	513	519	525	531	537	543	549	555	561	567
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503	509	515	521	527	533	539	545	551	557	563	569
504	510	516	522	528	534	540	546	552	558	564	570

Name ..... **Position** .....

Address .....

Fertilizer from Sewage Sludge

499 This efficient machine takes sludge cake from the drying beds and shreds, pulverizes and aerates it into a readily sold fertilizer. Royer sludge disintegrators range in capacity from 1 to 150 cubic yards per hour. The small Junior model is easily fed by one man, hand shoveling — the large NSYP-E model is built with an extension hopper for tractor-bucket feeding. Write the ROYER FOUNDRY & MACHINE CO., 170 PRINGLE ST., KINGSTON, PA.

Straightens Parking Meter Posts

500 This easy to operate post straightener will straighten a bent parking-meter post with a single set-up. The unit is designed with a 25-inch hydraulic stroke. It is available from STAR JACK CO., INC., 420 LEXINGTON AVE., NEW YORK 17, N. Y.

Water-Works Gate Valves

501 A full line of double-disc, parallel-seat, water-works gate valves designed for easy opening and closing and extra tight seating are described in *Bulletin No. 54W*. Each valve is individually inspected and hydrostatically tested to AWWA specifications. Installation and operation are simple, and maintenance is inexpensive. Write THE LUDLOW VALVE MFG. CO., INC., TROY, N. Y.

Easily Installed Traffic Barriers

502 Cities can channelize and protect vehicular and pedestrian traffic with Safeti-Bars, raised traffic barriers that keep cars and trucks in their proper lanes. Sturdy Safeti-Bars are easy to install with securing mastic and drive-pins. They are available with a special reflective coating for good nighttime visibility. For a new, illustrated circular, write the HAWKINS-HAWKINS CO., 1255 EAST-SHORE HIGHWAY, BERKELEY, CALIF.

Aluminum Bridge Railings

503 Sufficient fundamental design data are included in this new booklet to enable a bridge engineer to produce a complete aluminum bridge railing design without outside assistance. Light-weight aluminum railings reflect heat efficiently. They are easy to fabricate and require minimum maintenance. For full information, write the REYNOLDS METALS CO., 2500 S. THIRD ST., LOUISVILLE, KY.

Speeds Pipe Installation

504 It's fast and easy to install or renew pipe under pavement with the new Trojan pipe puller and pusher. The Trojan combines pushing and pulling in one machine, enabling you to install 40-foot services in as little as 20 minutes. It keeps pipe moving continuously, eliminating all resetting of grip. Full details on the Trojan Model A for pipe up to 1 inch in diameter, and the new Model B for pipe up to 2 inches in diameter, is available from THE TROJAN MFG. CO., 1113 RACE DR., TROY, OHIO.

Chimney Lining Reduces Fire Losses

505 Avoid fire losses resulting from defective flues and chimneys with a new clay flue lining, available in round, square and modular sizes. A clay flue lining will permanently fireproof your chimney, providing a better draft with no accumulations of soot. It is described in literature from the CLAY FLUE LINING INSTITUTE, 611B FIRST NATIONAL TOWER, AKRON 8, OHIO. Write for "A Standard Ordinance for Chimney Construction," recommended by the National Board of Fire Underwriters.

Refuse Trucks

506 This new 16 cubic yard loader prepacks refuse, holding up to 8,000 pounds of garbage, cans, glass, crates and bulky steel drums. The automatic refuse disposer operates continuously, facilitating loading at 2 miles per hour. All loading is done at the low, rear-end receiver, eliminating lifting. Refuse is dumped at a 45° angle, and is easily unloaded in only 12 seconds. Full details on the Herman Ram-Pak are available from THE HERMAN BODY CO., 4400 CLAYTON AVE., ST. LOUIS, MO.

Filing System for Large City Maps

507 A simple way to file your large municipal planning maps so that they are quickly accessible, is to use the new Roll-A-Way filing system. The system consists of a rack with parallel tracks from which maps are suspended by roll hangers. This rack is twice the length of the maps. Any map is quickly rolled from its filing place to the other end of the rack where it is in full view. For additional data, write ROLL-A-WAY FILING SYSTEMS CO., 4845 BELLEVUE AVE., DETROIT 7, MICH.

Remote Transmission Systems For Water and Sewage Plants

508 Autocon Telestep, a positive automatic control system with remote transmission, is designed for water, sewage and process plant use. Five basic Telestep models are available: 1-step, 2-step, 2-step with reporting signal, multiple step (bridge type) and proportional multiple step. These are described in *Bulletin 9100*, obtainable from the AUTOMATIC CONTROL CO., 995 UNIVERSITY AVE., ST. PAUL 4, MINN.

Controls Water Cut-Offs

509 Working with the Jacksonville (Fla.) Water Department, Bremer Brease, Inc., has developed a low-cost device for controlling water cut-offs. The Bremer curb lock is easily installed without removing the water meter. It is an ideal answer to the vacant house problem, and offers positive control of your subdivision problems. From one to five of these locks serve up to 100 services. Write BREMER BREASE, INC., 1107 MARGARET ST., JACKSONVILLE, FLA.

Locates Pipe and Water Leaks Quickly

510 Designed to do the work of two instruments, the new Goldak Dualtronic solves both pipe location and water-leak detection problems quickly and economically. This light-weight unit is easily operated by one man. It is offered along with the Model 87 pipe locator and a new box and valve locator with meter, by THE GOLDAK CO., 1544 W. GLENOAKS BLVD., GLENDALE 1, CALIF.

Improved Coagulant for Water And Sewage Treatment

511 In water treatment, Ferri-Floc coagulates surface or well waters, aids taste and odor control, and is effective in lime soda-ash softening. Used in sewage treatment, it coagulates waters and wastes over wide pH ranges, provides efficient operation regardless of rapid variations of raw sewage, and is effective for conditioning sludge prior to vacuum filtration or drying on sand beds. This versatile ferric sulphate is available from the TENNESSEE CORP., 617-629 GRANT BLDG., ATLANTA, GA. Information, sample and specifications will be furnished on request.

(Please turn to page 30 for more Bulletins)

Which Catalogs Interest You?

Write directly to the manufacturers or use the coupon on page 29

Sturdy Pipe Wrench

512 The I-beam handle on the new Ridgid pipe wrench provides the operator with a comfortable grip, enabling him to work faster and more efficiently. Each wrench is designed with a handy pipe scale on the hookjaw, and an easy-spinning adjusting nut. Sizes range from 6 to 60 inches—end pattern, from 6 to 36 inches. Write THE RIDGE TOOL CO., ELYRIA, OHIO.

Installs Curb Automatically

513 Concrete as well as asphalt curb is laid without forms, from 6 to 12 inches high and up to 10 inches at the base, with the new Canfield automatic curb layer. Three men operating this machine can put down up to 1,500 lineal feet of curb in one day. The varied curb mold patterns are interchangeable, and hand finishing is completely eliminated. Write THE CANFIELD CORP., P. O. BOX 439, SALISBURY, N. C.

New Trenching Machine

514 Cities can dig trenches 48 inches deep and 14, 16 or 18 inches wide quickly and easily with the new Universal trenching machine. Mounted on an Oliver "OC-3" crawler tractor, the Model 3A-48 trencher is easily operated in close quarters. It switches dirt instantly, to either side, and will hold line and grade without effort. Get full facts from the HELLER ENG. & MFG. CO., 1849-G E. SLAUSON AVE., LOS ANGELES 58, CALIF.

Rubber Tires Speed Tractor Operation

515 Equipped with rubber tires, the easy-to-operate Tournatractor pulls, dozes and pushes at speeds up to three times faster than ordinary crawler tractors. The unit is capable of high reverse speeds, up to 8 mph, and will travel from job-to-job at 19 mph. Powered by a 208-hp diesel engine, it features push-button controls, a sturdy steel foundation, and optional torque converter. The Tournatractor is made by the LeTOURNEAU-WESTINGHOUSE CO., PEORIA, ILL. It is described in *Form 54-005-T*.

Aluminum Diving Boards Wear Longer

516 Strength and maximum springing quality are combined in new, long-wearing aluminum diving boards designed and manufactured by JAMES A. PATTERSON, 16 E. BROAD ST., COLUMBUS 15, OHIO. Easily installed in municipal pools, these lightweight boards provide the finest diving conditions at lowest cost. They incorporate a special non-skid tread which replaces heavy cocoa-matting for greater safety. Details on request.

Horizontal Reel Extends Life of Fire Hose

517 With the Zierden horizontal reel fire hose is pushed, not pulled, into a free-rotating container to produce large-diameter, loose coils that avoid kinking. The push causes the container to rotate, automatically coiling the hose. In this way, 100 feet of 1-inch hose can be withdrawn and returned to the container in less than 90 seconds. For literature, write THE ZIERDEN CO., 3815 S. KINNICKINNIC AVE., MILWAUKEE 7, WIS.

Traffic Signs, Buttons And Stencils

518 Street signs of all types, steel or cast-aluminum traffic buttons, and large aluminum stencils for writing traffic directions on the pavement, are available from SARGENT & SOWELL, INC., GRAND PRAIRIE, TEXAS. Also offered by this company are street-marking machines, rubber traffic cones, and a variety of traffic signals. Write for literature.

Economical Street Maintenance

519 Two men operating the new Cartwright Pavette can automatically proportion the mix, right on the job, in quantities ranging from a half-shovelful to a wheelbarrow load. This low-cost blacktop street maintenance unit features a 200- to 600-gallon tank, plus a special hand spray for applying tack-coat. Further information is available from CARTWRIGHT INDUSTRIES, INC., P. O. BOX 3251, S. HIGHLANDS STA., BIRMINGHAM, ALA.

Simplifies Sewer Cleaning

520 In addition to regular main sewer line cleaning, the O'Brien Sewerking goes through traps and bends for the swift completion of virtually all of your sewer cleaning work. The unit incorporates an O-B power transmission which turns the cables and cutting tools into the sewer and, when the work is complete, pulls the cable back into the machine. Only two men are needed to operate the new trailer-mounted Sewerking. Write the O'BRIEN MFG. CO., DEPT. AC-12, 5663 NORTHWEST HIGHWAY, CHICAGO 30, ILL.

Calcium Chloride Aids Winter Street Repairs

521 Paving and repairing city streets in cold weather is easy when you mix your concrete with Solvay calcium chloride. Not only does this chemical permit positive control at all temperatures, but it provides added cold-weather protection and lowers your costs as well. A new booklet, *The Effect of Calcium Chloride on Portland Cement*, is available without cost from Dept. 61-1 of the SOLVAY PROCESS DIV., ALLIED CHEMICAL & DYE CORP., 61 BROADWAY, NEW YORK 6, N. Y.

Free Handbook for Surveyors and Engineers

522 The 1955 pocket-size edition of the Gurley Ephemeris contains an Almanac listing 28 selected stars for determining stellar observations, new charts for the sun and Polaris, definitions of astronomical terms, and many sample problems. The Ephemeris will be sent free to practicing surveyors and engineers and to instructors and students of surveying. Write W. and L. E. GURLEY, TROY, N. Y.

Photocopies Without Darkroom

523 How two simple devices prepare photocopies of records up to 14 inches wide, of any length, giving positive prints in less than a minute, is explained in literature from REMINGTON RAND INC., 315 FOURTH AVE., NEW YORK 10, N. Y. Write for *Leaflet P-385*.

New Pipe Pusher Cuts Trenching Costs

524 Designed without gears, racks, pinions or jack screws, the new Giant pipe pusher will install any pipe or conduit up to 15 inches in diameter. The unit grips the pipe at two positions, holding it rigidly in line. It eliminates most expensive and hazardous trenching, saving up to 80% on your trenching costs. Full details are contained in *Catalog No. 8*, available from the GIANT MFG. CO., COUNCIL BLUFFS, IA.

Rock Salt Provides Low-Cost Snow Removal

525 Combat dangerous, snow-filled streets with economical rock salt, available from CAYUGA ROCK SALT CO., INC., MYERS, N. Y. Correctly applied to streets and roads, rock salt provides a fast, easy way to control ice and snow, yet costs considerably less than sand or cinders. It saves on clean-up costs, too, eliminating spring cleaning of shoulders, drains and ditches. Write for literature.

New Sweeper Assures Metal-Free Streets

526 A new sweeper designed with Alinco permanent magnets picks up nails, wire and ferrous metal pieces. The unit will work on city streets, roads, loading areas and airport runways. It operates without an electric-power source, and is easily attached to any towing vehicle. For full facts on the Homer magnetic road sweeper, write THE HOMER MFG. CO., INC., LIMA, OHIO.

Low-Cost Water Treatment For the Small Community

527 The heart of this new packaged water treatment plant for small communities is a Graver Reactivator, a high-rate, self-contained softener and clarifier. The plant integrates all equipment from inlet to outlet. It includes a clear well, chlorinator, wet or dry chemical feeders, gravity or pressure filters, level and flow controls and instruments, and inter-connecting piping. For *Technical Reprint T-126*, write the GRAVER WATER CONDITIONING CO., 216 W. 14th ST., NEW YORK 11, N. Y.

Handles All of These City Jobs

528 A combination air compressor, tractor, backhoe and loader designed by SCHRAMM, INC., WEST CHESTER, PA., digs trenches, backfills, tamps and loads up to 2,500 pounds of material. In addition, the unit may be used for pavement breaking, rock drilling, bulldozing and for plowing snow. A full description of the Schramm Pneumatractor will be furnished on request.

Wedge Gate Valves for Water and Sewage Works

529 *Bulletin 107* discusses iron-body wedge gate valves, how they are constructed, and where to use them. Both outside-screw-and-yoke and non-rising stem models are featured, and complete working pressures are conveniently listed. Write the KENNEDY VALVE MFG. CO., ELMIRA, N. Y.

(Please turn to page 32 for more Bulletins)

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CERTIFIED MERCHANDISE · UNITED STATES TESTING CO., INC. · SEAL OF QUALITY

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Metcalf UNIFORM FABRICS

METCALF'S P & F FABRICS — TESTED AND CERTIFIED BY UNITED STATES TESTING CO.

Metcalf's P & F All-Wool, Stock-Dyed Blue Serge (#386) is the Only Police and Fireman's Uniform Fabric in America... TESTED and CERTIFIED by United States Testing Co.!

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The United States Testing Co., one of America's oldest impartial testing laboratories, ...ts of Metcalf P & F Stock-Dyed Blue Serge (#386)... a continuous program of quality control.

As a result of this "third degree," Metcalf's 386 is the only police and fireman's uniform fabric in America approved and certified for:

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- Durability
- Strength
- Shrinkage in dry cleaning
- Abrasion
- Fastness to light, perspiration, and dry cleaning.

Tropical Weights serges, 10-20 oz.; shetlands, 19 and 28 oz.

The METCALF Gold Seal on the back of fabric is your protection.

METCALF BROS. & CO., INC.
45 EAST 17th STREET, NEW YORK CITY

Obtain these Booklets Free of Charge!

Write directly to the manufacturers or use the coupon on page 29

Park and Playground Equipment

530 Sturdy combination swing-slide and see-saw outfits, heavy-duty benches, and portable and stationary picnic grills are included in this company's complete line of equipment for public parks and playgrounds. The firm also manufactures official regulation one-meter diving boards for municipal swimming pools. Write the AMERICAN PLAYGROUND DEVICE CO., ANDERSON, IND.

Portable Seating for Indoor And Outdoor Events

531 One set of Hussey portable steel bleachers or grandstands will care for every municipal occasion — indoors or out—seating the maximum number of spectators safely and comfortably. Hussey portable seating is easily erected and quickly dismounted. It is available in 6, 10 and 15 tier 12-foot sections. Write HUSSEY MFG. CO., INC., 546 RAILROAD AVE., NORTH BERWICK, MAINE.

Portable Welder Speeds Maintenance Work

532 One man picks up this lightweight portable welder, carries it to the job, plugs it into 110- or 220-volt current, and is ready to weld. Designed for a wide range of municipal maintenance and repair jobs, the 200A welder is easily powered by a portable generator. A new heavy-duty welder, the 400A, is also powered by a portable generator, and operates on 220- or 440-volt current. Address ROYAL ARC INDUSTRIES, INC., 425 CEDAR ST., CHILLICOTHE, ILL.

Measures Air Pollution

533 Smoke and haze concentrations in your city are easily determined by the new A.I.S.I. Automatic Smoke Sampler available from the RESEARCH APPLIANCE CO., BOX 463, W. VIEW RD., PITTSBURGH 9, PA. The unit measures air pollution 24 hours a day, recording at intervals of one-half, one or two hours. Its low cost makes it possible to locate a large number of samplers for complete coverage of a geographical area. Literature on request.

How to Construct A Sanitary Fill

534 The Drott Bulliclam Shovel method of sanitary fill can be established wherever a crawler tractor can operate and wherever sufficient cover material is available. This booklet from the Drott Mfg. Co. outlines good procedure and proper use of equipment for a true sanitary fill. It takes you from the initial planning stages to the final spreading and finishing operations. For your copy, write the DROTT MFG. CO., MILWAUKEE 8, WIS.

Choosing the Right Swimming Pool Filter

535 Design features of purification and filtering systems for municipal swimming pools of 50,000-gallon capacity and over, are included in *Bulletin 635*, from the R. P. ADAMS CO., INC., 225 E. PARK DR., BUFFALO 17, N. Y. The new bulletin features installation drawings, dimension charts, and a table on filter sizes. It describes the operation phases of the filtration cycle, and provides valuable aid in choosing the right filter installation.

Small Water Plant Gets Big City Filtration

536 A new water-works plant in Thomson, Ga. (population 5,000), is equipped with the same instrumentation and controls used in many of the country's largest filtration plants. This low-cost equipment includes Wheeler filter bottoms, Model RCE controllers, and new filter valve operating tables with loss of head and rate of flow gauges for convenient control of each filter. Bulletins describing these highly accurate units are available from BUILDERS-PROVIDENCE, INC., DIV. of B-I-F INDUSTRIES, INC., PROVIDENCE, R. I.

New Motor Grader Does Many City Jobs

537 A variety of attachments is available with the new No. 660 motor grader, increasing the unit's usefulness in a wide range of municipal applications. These optional attachments include a scarifier, bulldozer, elevating grader, "V" type snow plows and wings, a rotary snow plow, and a rotary-type snow wing. The versatile grader weighs 28,000 pounds, and is fully described in a new, illustrated catalog. Write the J. D. ADAMS MFG. CO., INDIANAPOLIS, IND.

Installs Pipe Without Digging

538 You don't have to tear up pavement to install pipe underground, according to the GREENLEE TOOL CO., 2032 COLUMBIA AVE., ROCKFORD, ILL. With the Greenlee pipe pusher, one man pushes pipe under obstacles quickly and economically, eliminating costly ditching and tedious backfilling. The new pipe pusher is offered in two models and is available with a special power pump. For additional data, write the company.

Effective Rack Rake

539 Use the Newport News Mechanical Rack Rake to clean trash racks found at the water intakes of hydroelectric and steam plants, pumping stations and canals. This power-operated unit enables plants to gain maximum head at intakes. It is described and illustrated in a new booklet from NEWPORT NEWS SHIPBUILDING and DRY DOCK CO., DEPT. AC-9, NEWPORT NEWS, VA.

Kills Mosquitoes Quickly

540 You don't need any equipment to kill mosquitoes with Tossits. You simply toss the soluble capsules into infested water and watch them dissolve. The powerful solution spreads rapidly in all directions forming a film of larvae-killing insecticides over the surface of the water. One Tossit will larvacide 1,000 square feet of water surface. For full information, write WYCO., INC., 5200 S. DIXIE HIGHWAY, WEST PALM BEACH, FLA.

Cuts Leaf-Disposal Costs

541 In one operation the self-propelled Jacobsen leaf mill picks up leaves, grinds them into fine particles and returns them to the lawn as a valuable mulch. Operated by one man, the unit eliminates time-consuming raking, hauling and burning. Sticks, stones and other objects are automatically ejected without damaging the machine. For additional information, write the JACOBSEN MFG. CO., RACINE, WIS.

Improves Traffic Control

542 The best way to avoid traffic bottlenecks is to analyze the volume, type and directional flow of vehicles traveling through tunnels, over bridges, and through busy intersections. A Traffic Control Denominator will tabulate these statistics for you, quickly, accurately and at lowest possible cost. Get full details by writing DEPT. AC-9, THE DENOMINATOR CO., INC., 261 BROADWAY, NEW YORK 7, N. Y.

Protects Masonry Structures

543 Applied with spray equipment, Secoton forms a substantial, tough, elastic, water repellent coating, resistant to industrial acids, alkalis, oils, salt spray and fungi. Cracks are completely bridged by the heavy vinyl membrane which expands and contracts with structural strains. Moreover, Secoton won't stain or burn, and is unaffected by temperature changes. It is an ideal coating for sewage digesters, reservoirs, and various masonry structures. Write the SURFACE ENGINEERING CO., INC., P. O. BOX 2273, WICHITA 1, KANS.

Smoke-Free Incinerators

544 Whether you're interested in building a new incinerator plant or in modernizing your present installation, *Bulletin No. 217A* should prove an effective planning guide. It discusses Nichols Monohearth mechanically stoked refuse incinerators, whose designs can now include the new water-spray type of fly-ash removal that guarantees nuisance-free operation. Both the Monohearth and the Nichols Herreshoff multiple hearth dryer-incinerator for sewage-sludge disposal are made by the NICHOLS ENGINEERING & RESEARCH CORP., 70 PINE ST., NEW YORK 5, N. Y.

Protects Public Property

545 The installation of Realock fence guards public property against loss from burglary and vandalism, reducing pilferage losses and lowering insurance rates. It eliminates the need for extra guards and cuts maintenance costs to a minimum. Write the WICKWIRE SPENCER STEEL DIV., THE COLORADO FUEL & IRON CORP., BUFFALO, N. Y.

New Outboard Motors For Police Boats

546 Equip police boats in your community with new Evinrude Aquasonic outboard motors. Designed especially for work boat duty, sturdy Aquasonic models provide smooth, quiet operation at low cost. They are fully described in literature from EVINRUDE MOTORS, DIV. of OUTBOARD MARINE & MFG. CO., 4626 N. 27th ST., MILWAUKEE 16, WIS.

Efficient Records Control

547 *Manual of Records Management* by Herman Limberg, management consultant, is offered free to those directly concerned with the problems of records control. Mr. Limberg was formerly in charge of training in the Division of Analysis of The New York City Bureau of the Budget. For your copy, write DOLIN METAL PRODUCTS, INC., 319-19 LEXINGTON AVE., BROOKLYN 16, N. Y., manufacturers of an extensive line of steel transfer files.

(Please turn to page 34 for more Bulletins)

...needed:

factual information on water potential to locate new factory site!

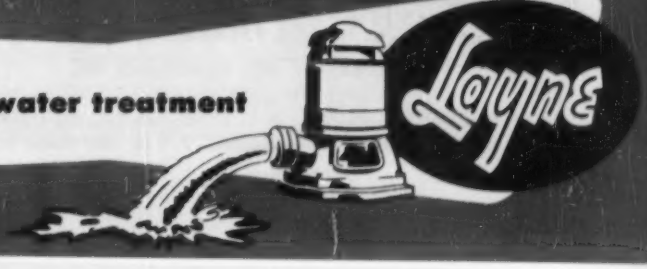
—Many facts must be gathered, screened and verified before a decision that may involve millions of dollars in capital expense is made. And not the least important is the water potential.

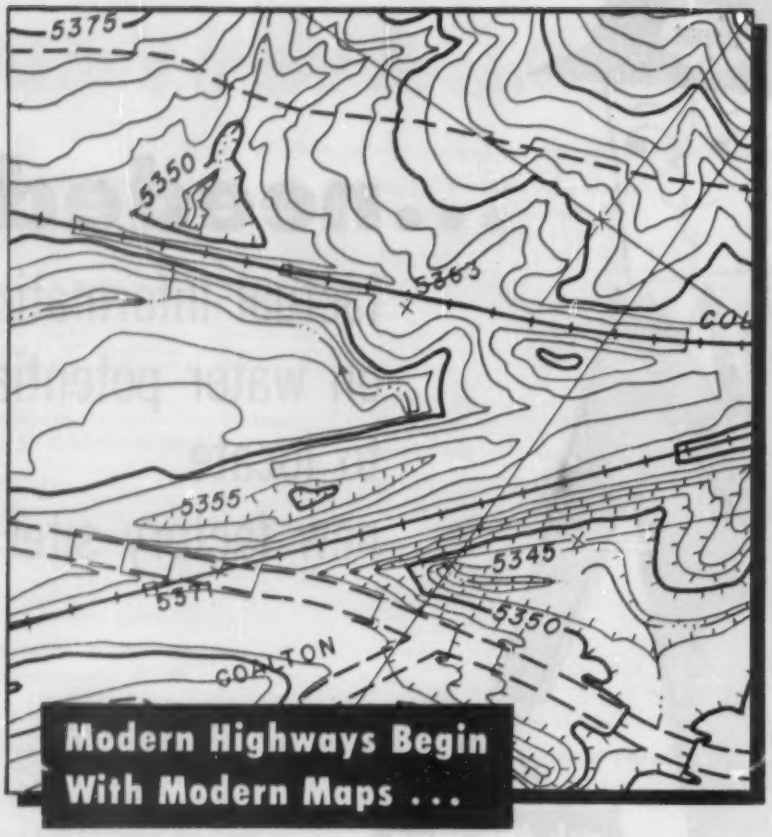
This is one of the many services that leading industrialists have called upon Layne to perform. The man from Layne is eager to answer any questions relating to water. And agriculture, industry and municipality know that it is wise first to "ask the man from Layne."

LAYNE & BOWLER, INC.
MEMPHIS 8, TENNESSEE

Layne Associate Companies throughout the World

water wells • vertical turbine pumps • water treatment





Modern Highways Begin With Modern Maps . . .

Post-war automobile production has put more vehicles on our highways than they were ever designed to handle. More and new types of highways are vitally needed now. Freeways, turnpikes and toll roads are being planned to shorten the distances, reduce grades and reduce travel time.

Topographic maps produced by Jack Ammann photogrammetric methods— have been produced— or are now being produced for the following:

- **Denver-Boulder Turnpike**
- **West Virginia Turnpike**
- **Kansas Turnpike**
- **Dallas-San Antonio Turnpike**
- **Dallas-Ft. Worth Turnpike**
- **Highway Departments of Vermont, Massachusetts, New York, Connecticut, Rhode Island, New Jersey, Kansas, Texas, California, Washington and Oregon.**

To meet this immediate need, highway officials and consulting engineers have turned to the services of Jack Ammann Photogrammetric Engineers. With Jack Ammann photogrammetry work can be speeded — costs can be cut—just as the highway projects listed have found.

Consult us on your mapping needs. Put our nearly a quarter-of-a-century of mapping experience to work.

Jack Ammann
PHOTOGRAMMETRIC ENGINEERS, INC
BROADWAY AT TENTH SAN ANTONIO 5, TEXAS

AIR SURVEYS—MAPS

EASTERN OFFICE: Manhasset, N. Y., 32 Hillcrest, P. O. Box 411, Phone Manhasset 7-1840
WESTERN OFFICE: (Denver) Lakewood, Colo., 995 Flower St., Phone Bel. 3-2090

Catalogs for You

Write directly to the manufacturers or use coupon on page 29

Protect Your Reservoirs

548 Easy to install in reservoirs, canals, and waterways, this prefabricated asphalt lining protects your water by guarding against erosion and seepage. According to the manufacturer, more than three million square feet of Gulf-Seal exposed-type asphalt lining is now in use. For a new *Engineering Brochure* containing complete technical data, write the GULF SEAL CORP., P. O. DRAWER 508-M, SOUTH HOUSTON, TEXAS.

Power for Portable Tools And Floodlights

549 Electric power to run the newest high-cycle chain saws, grinders, drills, wrenches and concrete vibrators, as well as standard universal tools and floodlights, is furnished by the new Homelite Dual Purpose Generator. This compact unit is easily transported in the trunk of a car. It provides high-cycle power as well as 115 V.D.C. right on the job. For complete information, write the HOMELITE CORP., 112 RIVERDALE AVE., PORT CHESTER, N. Y.

Clean Out Your Water Mains

550 Regardless of the inside condition of your water main, a thorough cleaning by this company will restore its original rated capacity to 95% or better, providing increased volume, higher pressure and reduced pumping costs. Write the NATIONAL WATER MAIN CLEANING CO., 50 CHURCH ST., NEW YORK, N. Y.

This Mixer Makes A Better Street Base

551 Streets constructed of properly assembled materials are better able to resist traffic wear. To assure a durable base that resists penetration in any weather, mix, blend and assemble your coarse and fine aggregates with a Seaman mixer. This efficient, low-cost unit is described in *Bulletin TPS*, available from SEAMAN MOTORS INC., 292 N. 25th ST., MILWAUKEE, WIS.

Effective Fire Fighters

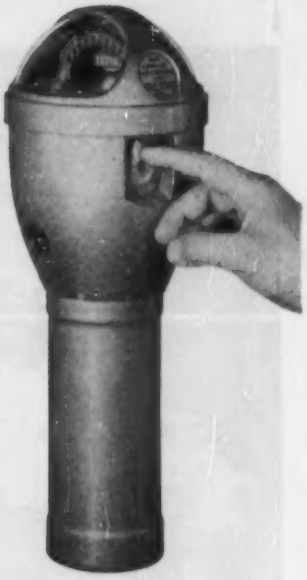
552 Dependable fire-fighting equipment mounted on an economical commercial truck chassis is offered by THE BOARDMAN CO., 1401 S. W. 11th ST., OKLAHOMA CITY, OKLA. Each Boardman tanker is equipped with a Waterous rotary gear pump designed to fight running fires while the truck is in motion. An aluminum hose reel and chrome booster-hose guide rollers speed operation and avoid hose damage. Details on request.

Efficient Diesel Provides Economical Operation

553 Operating 18 to 20 hours a day at the Decatur (Ind.) Electric Light and Power Plant, this efficient Hamilton diesel engine burns a heavy fuel with an invisible exhaust, for only 4.6 mills per kwhr. The unit, a 3,810-kw, 21½ by 27½ engine, provides for the turbulence at the time of the fuel injection, and permits more air in the cylinder. It is made by the HAMILTON DIV., BALDWIN-LIMA-HAMILTON, HAMILTON, OHIO.

(See p. 36 for more Bulletins)

THE BIG 3



1 DUNCAN-MILLER

2 DUNCAN-Automaton

3 The DUNCAN-MILLER "60"

by

THE WORLD'S LEADER IN PARKING METERS

1 For over 17 successful years, the DUNCAN-MILLER manual parking meter has been predominantly first in public acceptance and dependability.

2 Fully automatic to both the municipality and motorist, the DUNCAN-AUTOMATON possesses modern advantages superior to any automatic parking meter on the market.

3 Modern ideas in functional design have been combined with exclusive features previously introduced in universally acclaimed Duncan built products to make the DUNCAN-MILLER "60" the finest parking meter ever produced.

Our traffic specialists will be glad to counsel with you

+ Plus + an easier system for collecting overtime parking fines...

DUNCAN FINE-O-METER

DUNCAN PARKING METER CORP.

835 N. WOOD ST., CHICAGO 22, ILL. • FACTORIES: HARRISON, ARK. and MONTREAL, P.Q., CANADA

Manufacturers of fully automatic and manual parking meters.

Have you investigated the **LOAD LUGGER*** for bulk collection and disposal of refuse?

COLLECTING

Patented containers are low, fill easily from three sides and the top, fill all the way, are water-tight halfway up, shut tight against flies and odors, can be locked against "free loaders."

PICKING UP

With safe load distribution, powerful hydraulic arms lift container to flat deck of LOAD LUGGER (easily mounted on any standard truck chassis and operated by the driver from his cab).

HAULING

With load well forward and no clumsy superstructure or excess weight, the cleanly designed LOAD LUGGER carries more pay load on a given truck chassis than any comparable equipment.

DISPOSING

Controlled vertical tilt and full discharge door, spring-loaded to open and close automatically, afford complete and safe dumping of all contents (no troublesome or leaky bottom opening).

Two LOAD LUGGER series are available for bulk collection and disposal of refuse: a 9000-pound pay load model with 6, 8 or 10 cubic-yard containers, and a 12000-pound pay load model with 8, 10 or 12 cubic-yard containers. Other LOAD LUGGER models carry maximum loads of 4500 to 26000 pounds.

The LOAD LUGGER SYSTEM lets one truck and driver do the work of many by continually picking up, hauling (then dumping, spreading, pouring or delivering the load) and returning a number of LOAD LUGGER containers or pallets to strategic locations for filling at operational convenience.

* registered trade mark of and manufactured by **BROOKS EQUIPMENT & MFG. CO.**, KNOXVILLE 21, TENNESSEE. Used all over the world. Write for catalog and price list.

Catalogs for You

Write directly to the manufacturers or use coupon on page 29

Compound Water Meters

554 Available in an all-bronze case, in sizes ranging from 2 to 6 inches, the Hersey compound water meter offers accurate registration of all rates of flow. This dependable meter is described in literature from the HERSEY MANUFACTURING CO., SOUTH BOSTON, MASS.

Economical Turbine Pumps

555 The A. O. SMITH CORP., HYDRAULIC DIV., 5715 SMITHWAY ST., LOS ANGELES 22, CALIF., will help you select the right turbine pump to meet any municipal pumping requirement. Smithway pumps are available with either closed or open impellers in a variety of pump-suction designs. Discharge heads will be furnished in cast iron, steel, or fabricated steel in a wide range of sizes. Write for *Bulletin No. 735-1*.

Water Tank Coatings

556 Applied to the interior of any water tank, Inertol coatings effectively resist corrosion without imparting either taste or odor to the water. The coatings for tank interiors are formulated to withstand the effects of constant and intermittent submersion. Those designed for tank exteriors are immune to changing weather conditions. How Inertol coatings minimize tank maintenance and lower repair costs, is explained in literature from INERTOL CO., INC., 480-490 FRELINGHUYSEN AVE., NEWARK 5, N. J.

Iron Claw for Police

557 With an Iron Claw, a police officer can grip an opponent with strength far greater and speed far faster than his own hand, and control him far more thoroughly. A new bulletin illustrates 22 grips with this device for controlling suspects, recalcitrant prisoners, and paycopaths. For your copy, write ARGUS MFG. CO., 1134 N. KILBOURN AVE., CHICAGO 51, ILL.

Canvas Tops Protect Municipal Pick-up Trucks

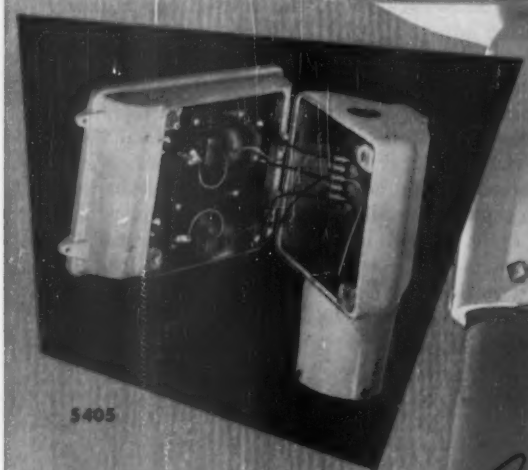
558 Convert your pick-up trucks into closed-body trucks that will function in any weather by furnishing them with new Covered Wagon Tops. These waterproof, canvas tops feature heavy-duty zippers on each side, a rear curtain which rolls up and is held in place by strap fasteners, and two unbreakable glass windows. Special fittings and straps fasten the top to the pick-up box. For additional data, write the D & M TRUCK TOP CO., 12186 PETOSKEY AVE., DETROIT 4, MICH.

Fast Cutting Chain Saw

559 Powered by a 3½ brake hp, single-cylinder, 2-cycle, air-cooled gasoline engine, the new Mall Model 1 MG chain saw cuts quickly through hard, soft, wet or frozen wood. An ideal unit for cutting and trimming fence posts, felling trees and slicing up logs, the 1 MG combines sturdy construction with lightning cutting speed. The cutting bar, available in 18-, 24-, 30-, 36-, and 42-inch sizes, swivels 360° to permit cutting at any angle. Write MALL TOOL CO., 7740 S. CHICAGO AVE., CHICAGO 19, ILL.

(See p. 40 for more Bulletins)

AUTOFLOW
Neon Signals



5405

The new Model AN-1 AUTOFLOW Neon Signal is engineered for application to standard AUTOFLOW adjustable signals without modification. Designed for all conventional mounting arrangements with standard brackets. Incorporates large neon tube letters (4" high) on 10" x 15" face. Utilized cast aluminum housing. Light in weight, corrosion resistant, weather-proof.

SOUTHERN *Signals* INC.

222 BEACH STREET • P. O. BOX 1303 • SHREVEPORT, LOUISIANA

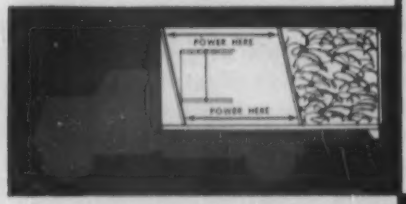
M-B PACKER GARBAGE BODY

Packs more refuse per cubic yard
Lowest body cost
Lowest truck cost

for garbage • ashes • crates and boxes • leaves • snow

check these money saving features

- Low cost body
- Low cost, widely used truck chassis
- Simple design reduces maintenance repairs and servicing
- Fast, safe, easy loading and packing
- More load capacity because of complete compaction
- Low cost per mile of operation
- Less manpower than conventional methods of collection



Each cycle of the M-B Packer plate provides complete, even compaction—insuring maximum load per cubic yard of capacity and more blocks of pick-up coverage per load. Power is applied to the plate at the top and bottom, simultaneously.

handles big loads on a small truck

M-B Packers handle full 12-14-16 cubic yards of compacted refuse and yet you need only a 1½ to 2 ton capacity truck!

You can purchase *two* M-B Packers for the cost of *one* highly complicated competitive unit.

You get the most for your money with an M-B. • M-B Packers are easy and safe to load from either side. • M-B takes less men per truck than other methods of collection. • M-B handles large wooden crates and boxes through its rear doors — material that would ordinarily be left by other bodies. • M-B Packers have racks on top to handle bed springs, mattresses and other odd-shaped refuse. • M-B Packer plate completely compacts 2 cubic yards of loose garbage at a cycle. • M-B unloads itself by ejecting load out the rear — fast and safely — without danger of upending. • M-B mounts on popular, low-cost, light weight trucks of 16,000# G.V.W. with standard 102" cab-to-axle length. • You can use the M-B Packer as a general purpose truck when you desire.

Save on refuse collection. Get all the facts on M-B Packer Bodies. Call or write today.

M-B CORPORATION
FORMERLY MEILI-BLUMBERG CORP.
New Holstein, Wis.
HIGHWAY MARKERS • SWEEPERS • TRAILERS • PAINTS • REFLECTIVE BEADS

Model 3A-48 Mounted on OLIVER "OC-3" Crawler Tractor

7 DIFFICULT TRENCHING OPERATIONS Made easy with... THE UNIVERSAL TRENCHER

Especially designed for all around "UTILITY TRENCHING" . . . Home Footings, General Service Lines, Irrigation Ditches, etc. Trenches to 48" depth and 14", 16", 18" Width . . . All hydraulic controls with side-seat arrangement reducing "Operator Fatigue"

SEE YOUR NEAREST "OLIVER" DEALER FOR FULL PARTICULARS

Send for our FREE FOLDER for your file . . . It outlines outstanding FEATURES and SPECIFICATIONS of the UNIVERSAL TRENCHER

HELLER Eng. & Mfg. Co.
1849-C East Slauson Ave.,
Los Angeles 58, Calif.

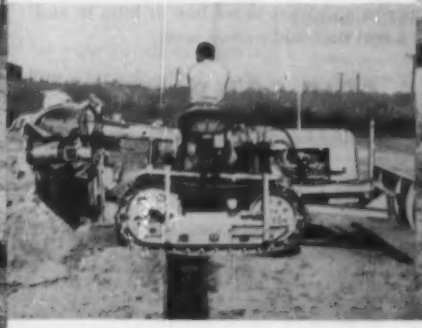
SWITCHES DIRT, INSTANTLY, TO EITHER SIDE

STREET ASPHALT IS NO PROBLEM

HOLDS LINE AND GRADE WITHOUT EFFORT

TRENCHES EASILY IN SMALL SPACE . . . NEAR BUILDINGS, etc.

SQUARE TRENCHES



CROSS TRENCHES

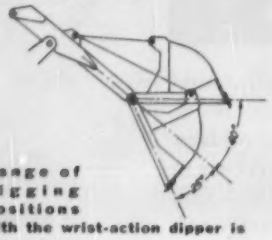
PIPE LINE STRIPPING

WRIST-ACTION DIPPER GIVES NEW ANGLE to Trench Digging

Note how wrist action brings dipper mouth in "face up" position — helps keep big loads from spilling. Wrist-action dipper is available in 18-in. and 12-in. dipper widths.

. . . Adds 50% More Power!

BUCYRUS-ERIE OFFERS another outstanding feature in dragshovel performance — the wrist-action dipper. Dipper is hinged at lower end of dragshovel handle and rotates in a vertical plane through an arc of 65 degrees, from a position 25 degrees ahead of handle to 40 degrees behind it.



Range of digging positions with the wrist-action dipper is shown here.

Wrist action permits operator to vary the dipper's position so that dipper teeth bite into ground at best digging angle. You not only get bigger loads but also less spillage because dipper can be rotated to best carrying position. Wrist action provides these additional advantages, too:

1. Actual increase of 50% more power delivered at dipper lip — means up to 6 tons of tooth force.

2. The wrist-action Hydrohoe can dig a vertical wall or short, deep trenches (deeper than they are long) with virtually no hand work; dig column footings; cut trenches 12 to 24 inches wide by as much as 13 feet deep in tough clay.

3. By working wrist action along with boom telescope, operator can pry out rocks and expose buried pipe with far less danger of pipe damage.

4. Wrist action dipper rotates past stationary door providing automatic ejection of sticky materials — results in more and bigger payloads.

5. Over-all performance is improved by increasing power available at dipper. You have to see this wrist-action dipper in operation to see how it bites in and pries its way through tough clay. It's a real time and money saver.

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Get full details on the new Hydrohoe wrist-action dipper and the versatile Hydrocrane. Learn how attachments can be interchanged in minutes. Send coupon today.

Bucyrus-Erie Company
South Milwaukee, Wisconsin
Gentlemen:
Please send me full details on the new wrist-action Hydrohoe ☐
Hydrocrane ☐

NAME.....
ORGANIZATION.....
ADDRESS.....
CITY..... STATE.....

11H54

Catalogs for You

Write directly to the manufacturers or use coupon on page 29

Your Pavements Marked By Contract

560 If your city is not equipped to place traffic or parking markers on your streets in the manner that they ought to be placed, you still can get the job done right. Call on the Contract Technician Service of the PRISMO SAFETY CORP., HUNTINGDON, PA.

Make Your Own Street-Name Signs

561 An easy-to-operate engraving machine enables cities to make their own street-name signs, traffic markers and other signs quickly and economically. The portable Hermes unit engraves on plastics, wood or metals. It is made by NEW HERMES ENGRAVING MACHINE CORP., DEPT. 87, 13-19 UNIVERSITY PL., NEW YORK 3, N. Y.

Cuts Large-Diameter Pipe Quickly

562 Two heavy-duty pipe cutters, Model No. 01 for 4- to 8-inch pipe, and Model No. 1 for 4- to 12-inch pipe, are equipped with drop-forged frame and links and long-lasting cutter wheels for fast, efficient operation. Both are described in a new circular and price list from the ELLIS & FORD MFG. CO., FERNDALE 20, MICH.

New 4-Wheel Scraper

563 Newest addition to the Allis-Chalmers line of pull-type scrapers is a 15-cubic-yard struck (19-cubic-yard heaped) capacity, rubber-tired, 4-wheel unit, called the Model 315. This versatile scraper provides a 9 foot 8-inch wide cut with a carbon steel, offset-type cutting edge. It measures 33 feet 5 inches long, 11 feet 6¾ inches wide, and 8 feet 8 inches high with the blade on the ground. Write the ALLIS-CHALMERS MFG. CO., TRACTOR DIV., MILWAUKEE 1, WIS.

Low-Cost Municipal Power

564 Combining efficient management with the use of Nordberg Diesel and Duafuel engines, the Ponca City (Okla.) Light Department has earned net profits approaching five million dollars during the past 10 years. Your city, too, can benefit from these efficient, low-cost power units. For complete information on Diesel, Duafuel and Spark-Fired Gas engines, write the NORDBERG MFG. CO., MILWAUKEE, WIS.

House Numbers

563 Black porcelain enamel house numbers, set against a white background, are available for use with or without holders. Each number is constructed with a hole for mounting. A special aluminum holder may be obtained for two or more numbers. Write STANDARD SIGNS, INC., 3199 E. 65th ST., CLEVELAND 27, OHIO.

Electronic Towels

566 Cities pay as little as two cents a day to operate a "Steri-Dri" electronic towel in public washrooms. This compact new unit dries hands and face simultaneously at the push of a button. It features dependable ozonating action which kills odors—keeps washroom air fresh. For complete information, write the ELECTRONIC TOWEL CORP., 342 MADISON AVE., NEW YORK 17, N. Y.

YOUR ROADS OR STREETS CAN BE...

SAFE AND SMOOTH

LIKE THIS

...AND AT LOW COST!

There's no reason for the washboard, pot-holed, broken condition of your streets or roads. Those worn-out surfaces can be quickly rebuilt into smooth, safe traffic arteries without increasing tax rates one cent—with the Athey Method of surface reclamation!

This new method, developed by construction engineers and already adopted by communities in every part of the country, enables you to resurface worn blacktop or gravel roads by using materials in the old surfacing. The Athey Portable Breaker, coupled to the Athey Force-Feed Loader, will in one operation pick up, crush and return the material to subgrade. Costs are 40% to 60% less than those of laying a new surface.

Don't delay another year and let your roads or streets deteriorate still further. Look into the Athey Method, right now, and be ready to give your citizens safe and smooth roadways starting this spring. Your Athey-Caterpillar Dealer can give you facts, figures and other information. Call on him or write direct.

SEND FOR FREE MANUAL . . .

Ask your Athey-Caterpillar Dealer for a free copy of the road reclamation manual, "The Athey Method of Reclaiming Worn Road and Street Surfaces"... or write to Athey Products Corporation, 5631 West 65th St., Chicago 38, Ill.

the KEY MACHINE

. . . in the Athey Method is the PB3 Portable Breaker. The old surface is scarified and windrowed . . . a Force-Feed Loader picks up the material and feeds it to the towed breaker, where it is reduced to reusable size . . . then new binder is added and the material is spread and rolled into a smooth, new, long-lasting surface.

Athey

PRODUCTS CORPORATION

5631 WEST 65TH STREET
CHICAGO 38, ILLINOIS

"Our Disposal Costs Dropped from $1.25 to 60¢ per ton"

Sanford City Manager W. E. Knowles tells this story:

Area-Type Bullclam Sanitary Fill Saves Money, Reclaims Marshy Wasteland for Sanford, Florida

ROOM FOR LOTS MORE. More than 11,000 tons of refuse is dumped at fillsite annually with the "One Man Sanitation Squad" easily keeping ahead of the haul trucks.

NO FLIES, NO FIRES. At the end of each shift, compacted refuse is covered with a 12-inch earth seal to kill fly larvae and prevent rodents from burrowing into the material.

MAGICAL TRANSFORMATION. Bullclam method of sanitary landfill changes this former marshy wasteland into valuable industrial site.

Here's what W. E. Knowles, City Manager, Sanford, Florida, has to say about his community's sanitary landfill.

"We built an acre of land from a marsh with refuse during our three months of operation. With only one man and the TD-14A INTERNATIONAL DROTT *Bullclam Shovel working at our fillsite, our disposal costs dropped from $1.25 to 60¢ per ton in the same period.*

"High water level in the marshland we're reclaiming makes it impractical to excavate a trench, so we're using the area-type sanitary landfill. The area is being built up six feet by having trucks deliver refuse to the selected area where it is spread, compacted and covered by our machine.

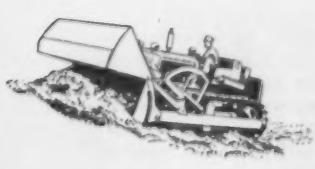
"There are no flies, rodents or wind-blown waste and it's much cheaper and better than our old incinerator method any way you want to figure it."

INTERNATIONAL DROTT Bullclam Shovels are the only units specially designed for all sanitary landfill operations. To learn how all the residents in your community can benefit, call your INTERNATIONAL Industrial Power Distributor today. He'll help you select a site and arrange a demonstration that will show your officials the savings you will get by putting a "One Man Sanitation Squad" to work.

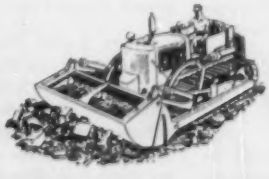
Remember, your INTERNATIONAL Industrial Power Distributor will call in a sanitary landfill expert to assist you in setting up a practical and money-saving sanitary landfill for your community. There is no charge for this service.

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS
DROTT MANUFACTURING CORPORATION
MILWAUKEE 8, WISCONSIN

FIRM FOOTING. Refuse delivered to fillsite by City of Sanford sanitation trucks is spread and compacted effectively in marshland withminimum settling by TD-14A INTERNATIONAL DROTT Bullclam Shovel.

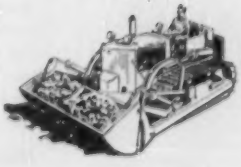


1. Prepares the site



2. Crushes and compacts refuse

3. Transports and spreads earth cover



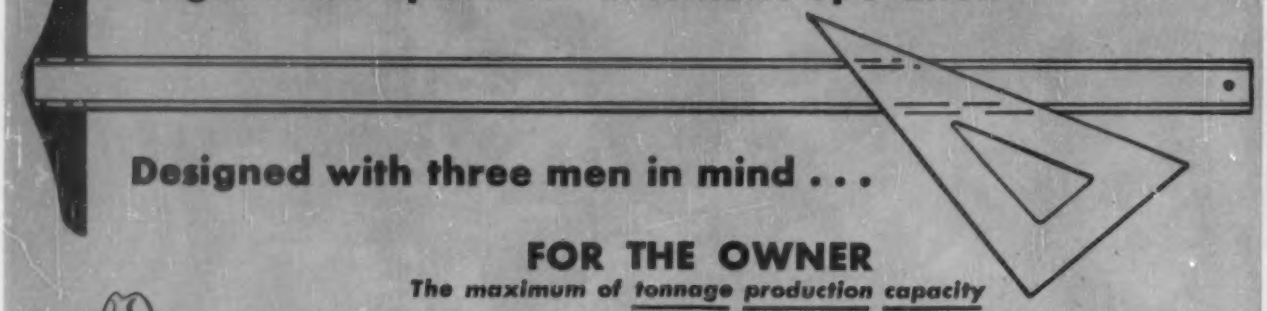
4. Grades and levels finished area

INTERNATIONAL HARVESTER

INTERNATIONAL DROTT

introducing the Barber-Greene

The first batch-plant ever designed from its original conception for automatic operation



Designed with three men in mind . . .

FOR THE OWNER

The maximum of tonnage production capacity

ALL SIZES OF AGGREGATE, INCLUDING THE MINERAL FILLER, ARE WEIGHED SIMULTANEOUSLY. Total weighing time for all ingredients is considerably less than the shortest mixing time in any specification. The only limit on hourly production is the specified mixing time. The completely new pugmill principle gives *thorough coating in less time than any other pugmill manufactured today*. When a minimum mixing time is *not* specified, complete coating can be obtained and the tonnage output increased to far above the production of plants of comparable pugmill capacity. Virtually no time lost in discharging. Full-opening bottom gives instantaneous discharge without segregation.

The maximum of flexibility

The plant may be "preset" for all-day production of the same mix in repetitive cycles, and *instantly* switched for a new mix for the "drive-in" customer. *Sooner than the next truck can drive under*, the plant is back to its preset proportions and in repetitive cycle operation again.

FOR THE OPERATOR

A new ease and simplicity of operation

Automatic Operation. **With the proportions preset, the operator locks in the "cycle" button when a truck drives under. The plant then automatically goes through complete cycles, *including discharging to the truck*. If he merely pushes the automatic button (without locking it), the plant goes through the complete cycle up to the point of discharging.**

Manual Operation. **For individual loads or other "drive-in" trade, the operator instantly disengages the preset combinations and weighs out each size of aggregate in ordinary batch-plant fashion. Operating one valve resets the preset proportions.**

Using preset proportions, the operator can manually weigh the materials by either operating one valve to *WEIGH ALL SIZES SIMULTANEOUSLY*, or operating the individual bin valves to weigh each size separately. In either of these cases, *no skill or judgment is required* for accuracy. The preset combinations control the proper weight.

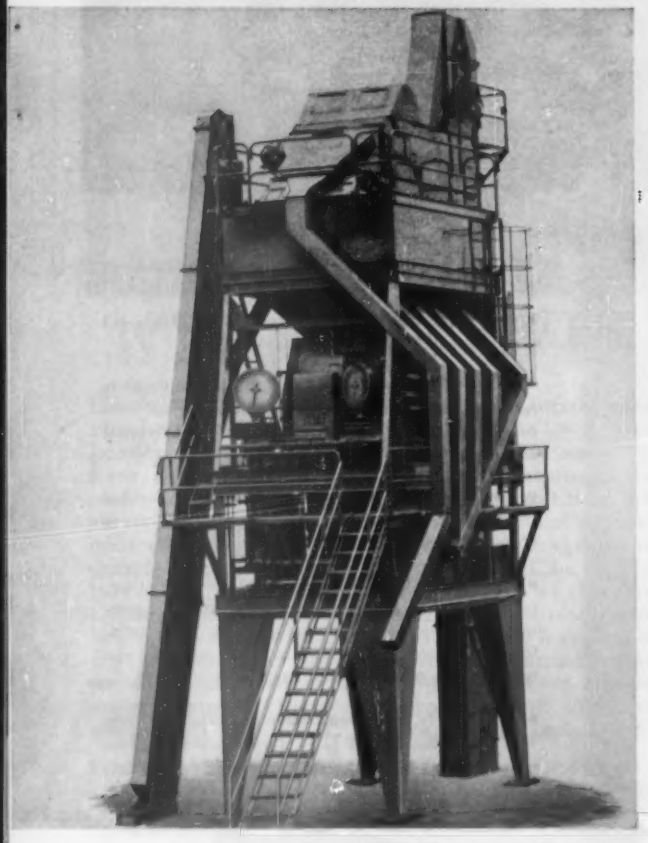
FOR THE INSPECTOR

At any time, the inspector can quickly check the *weight* of the *asphalt*, the *weight* of *each size of aggregate*, the *weight* of the *mineral filler*, or the *weight* of the *total aggregate*.

The plant *automatically extracts a true cross-sectional sample* of the aggregate in each bin as part of its regular operating cycle. Normally this sample is fed into the next batch, but at any time the inspector can remove this sample for a gradation check. The plant can be set so that the cycle will be interrupted if there is any variation from the preset proportions.

BITUMINOUS Batch Plant

890 series



Here is the most revolutionary development in the field of bituminous paving since Barber-Greene introduced the continuous plant over a quarter century ago.

When continuous type? When batch type?

The superior performance of the new Barber-Greene Batch-Plant is *not* reason for switching to batch-plants in applications where a continuous-type plant will serve.

No batch-plant, not even the new Barber-Greene, can compete with the continuous plant for highway work, or any application where high tonnage production and portability are important factors.

The basic advantages of the continuous principle continue to exist, and the continuous plant should and will continue to be the most popular.

However, where the batch principle is preferred, primarily for the purpose of serving frequent "drive-in" trade, requiring different mixes during the day, Barber-Greene now offers the outstanding batch-plant of the field.

For years, Barber-Greene has produced more asphalt plants than all others combined. We continue to offer the most comprehensive line of bituminous equipment of any manufacturer.

Automatic Controls

The electric controls are simple 110-volt A.C. circuits. There are *no* electronic devices. The automatic measuring itself is *not* dependent on the electrical controls. If for any reason the operator wishes or needs to operate without the electrical controls, he may do so, and no skill or judgment is required.

55-1-WB

Barber-Greene

AURORA, ILLINOIS, U.S.A.

WRITE for INFORMATION

descriptive literature . . . sound movies

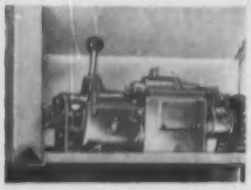
cost studies . . . nearby job inspection . . . plant layouts

The Improved **Baughman**

Model K4SC
SAND & CINDER SPREADER

America's No. 1 Name
IN ICE CONTROL EQUIPMENT

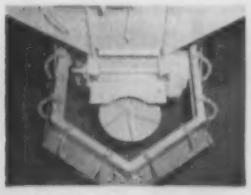
Increase Your SPREADING EFFICIENCY with these 3 *Baughman* Features:



Baughman 2-Speed Transmission. Regulates speed of conveyor chain. Permits the operator to spread a thick or thin application as the case may require.

Oil-Sealed Clutch. Permits spot-spreading, as at intersections, safety zones, and other special areas—without having to stop or start. One-man cab control insures the driver's safety during all spreading operations.

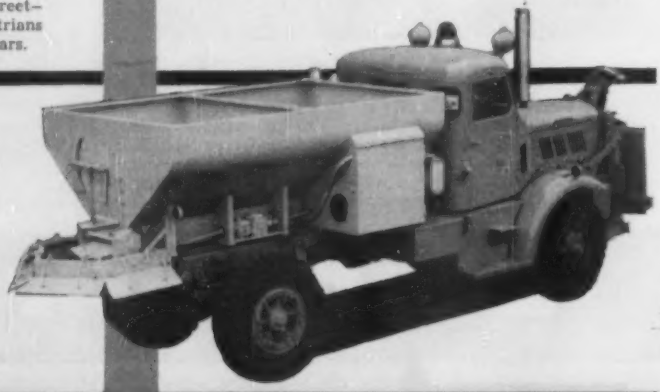
Note: Both the transmission and clutch are optional equipment, designed to improve the operating efficiency of the K4SC.



Patented Safety Baffles. Put the material where you want it. Easily adjusted to regulate coverage from 8 to 40 foot widths. Baffles deflect material onto the road or street—prevent injury to pedestrians or damage to passing cars.

for the uniformly controlled application of CINDERS, SAND, SALT, CHLORIDE, CHAT or GRAVEL

- **Available in Two Models:** Power Take-Off (above) or Auxiliary Engine Drive (see below).
- **Adjustable Spread:** Can be accurately adjusted to spread to the right or left, in a constantly uniform pattern. Metering-type endgate has 60 individual adjustments.
- **Electro-Welded Body:** Rugged, one-piece welded construction—with streamlined design that insures better material flow.
- **Many Other Uses:** For spreading lime or fertilizer, for building up road shoulders, seal coating, or sowing seeds in parks and along highways. With Split-Bottom Accessory (see reverse side) the body can be used as a regular dump body.
- **A Size to Fit Every Requirement:** *Widths:* 6′ 6″ and 7′ 10″. *Lengths:* from 8′ to 17′. *Capacities:* from 4 cu. yds. to 17 cu. yds. Larger sizes built on special order.



AUXILIARY GAS ENGINE — When equipped with Auxiliary Gas Engine as shown in photo at right, the Baughman Body is a complete unit. The auxiliary engine provides the drive for both the conveyor and the distributor. Exhaust gases are circulated through the length of the body bed to prevent freezing of material. This body can be moved as a unit, can be set within a regular dump body and be ready to operate in as little as 12 minutes—since there are no power take-off connections necessary. Tool compartment on this model is mounted on the left side of body (optional equipment).

"When You Own a BAUGHMAN . . . You Know You Own the FINEST"

BAUGHMAN MANUFACTURING CO.

150 Shipman Road • Jerseyville, Illinois

The Greatest FRONT END LOADER VALUE *On Earth...*

IS THE NEW DAVIS LOADER FOR 1955

Here's the loader that YOU asked for. Already recognized as America's quality loader, the new Davis Loader incorporates all the features that customers have asked for...and as standard equipment. Lift rams with down pressure, rubber mounting with shock slots to cut down wear and tear on tractor, large centralized reservoir for a *clean* hydraulic system and double strength lift arms are just a few of the new features. Add these to the famous features of the Davis Loader such as built-in strength without obstructing braces, easy mounting and many others. But find out for yourself. See why hundreds of contractors and municipalities insist upon Davis Loaders. Inspect every feature...then compare it...and when you make your choice *it is sure to be the Davis Loader.*

With These Attachments for the Industrial User...

• Material Bucket with high carbon steel cutting edge • Scarifier • Utility Bucket for handling bulky material, such as snow • Crane • Hammer for busting pavement, rocks, concrete • Dozer blade with extra hard dozer edge

***Manufactured by the Makers of the* Pit-Bull**

HAS DOWN PRESSURE

Here's how the down pressure on the Models 101-D and the 102 will give extra power for tough digging jobs.

FITS ALL POPULAR TRACTORS

The Model 101-D with double-acting lift cylinders for down pressure, Model 101-S with single-acting lift cylinders fit 2-3 plow tractors. The Model 102 with double-acting lift cylinders and twin dump cylinders fits 3-4 plow tractors.

SEND this coupon for FREE literature

Please send me literature on the Davis Loader to fit a _____ tractor.

I would also like literature on the Davis Pit-Bull ☐

*Name*_____

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MID-WESTERN INDUSTRIES, INC.

1009 S. WEST ST., DEPT. A. WICHITA, KANSAS

The Davis Loader is manufactured by the same organization that makes the revolutionary Davis Pit-Bull. Let a demonstration show you how it will perform as well or better than conventional equipment costing thousands of dollars more. And it has a large number of attachments that makes it your most economical industrial machinery buy. See your dealer or write for details.

designed with dozing in mind

ALLIS-CHALMERS HD-5
50 belt hp—11,250 lb

In its weight and power class, only the Allis-Chalmers HD-5 crawler gives you a tractor that is new in design and built with bulldozing in mind — with a main frame that is designed for front-mounted equipment, built-in provision for hydraulic pump, reduced front-end overhang, and better over-all balance. That is why the HD-5 does more work in its power range — at a lower cost and with less down time.

BUILT FOR TODAY'S JOBS. The pace-setting design of the HD-5 gives you important margins of safety in power, strength, and balance for longer, more productive tractor life. Each part is designed and built with a new standard of performance to meet today's increased use of tractor-mounted equipment.

BALANCED WEIGHT. The Allis-Chalmers all-steel, welded box A-type main frame eliminates dead weight and permits the weight to be placed where it will add to working strength and to tractor balance. For instance, the strong, heavy truck frames keep tracks in line constantly, contribute to better weight distribution and a lower center of gravity — with improved bulldozing and longer life.

ENGINE-MOUNTED DOZER. The box A-type main frame also permits the use of an engine-mounted dozer, with blade located close to the tracks for improved over-all balance, greater strength, and more accurate blading. This type of construction provides direct down pressure on the blade, eliminates heavy, bulky mountings that clog with material and debris, gives better accessibility for inspection and servicing.

GREATER GROUND CLEARANCE. Double reduction final drives provide ample ground clearance to take advantage of the HD-5's low center of gravity and full traction in mud, soft footing, or rough going.

Plus These Additional Money-Saving Features: *1,000-hour lubrication intervals* for truck wheels, idlers, and support rollers saves time, cuts labor cost . . . *unit construction* for easy servicing, because box A-type main frame makes major assemblies readily accessible for inspection, adjustment, and servicing . . . *operator comfort* second to none, with convenient controls, full vision, easy steering, and simplified shifting.

Write for detailed literature or contact your Allis-Chalmers dealer. He will be glad to demonstrate the advantages of the HD-5.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

HOLD SANITATION PROBLEMS IN THE PALM OF YOUR HAND

WITH HTH TABLETS

For economical and effective maintenance of chlorine residuals over an extended period, HTH Tablets have proved their value on a wide variety of sanitation problems. Added to water, they go to work immediately to give you slow, steady chlorination needed for the following applications:

- Sanitizing newly laid and newly repaired pipe lines.
- Destroying algae; controlling bacterial growth in spray ponds, reservoirs, basins, sand filters, etc.
- Disinfecting swimming pool water.
- Sanitizing new wells, both during and after drilling.
- Destroying offensive odors originating in stagnant ponds, ditches, etc., especially those subject to seepage from septic tanks.
- Controlling the breeding of mosquitoes, flies and insects.
- Disinfecting effluents, controlling odors, and B.O.D. reduction at sewage disposal plants.
- Miscellaneous sanitizing and deodorizing.

MATHIESON

HTH Tablets contain not less than 70% available chlorine. They are packed in 100-lb. lithographed steel drums and in cases of six 7½-lb. cans.

2885

Get complete information from your HTH supply house or mail this coupon for detailed literature.

OLIN MATHIESON CHEMICAL CORPORATION
Industrial Chemicals Division
Baltimore 3, Maryland

Please send information on HTH Tablets.

NAME _____

COMPANY _____

ADDRESS _____

_____

diesel or gasoline power

in OLIVER'S new Super 55

most powerful tractor of its type!

Two husky overhead valve Super 55 engines to choose from! Pick the fuel that fits your needs the best, cuts your costs the most.

The diesel is a *full* diesel—starts and runs on diesel fuel alone. An engine rugged and responsive, and one that takes little upkeep. And this diesel is weatherproof—easy to start even after long layups.

Pick the gasoline, and you get an engine with a compression ratio of 7.0 to 1—highest for an industrial tractor! Extra high compression means greater power on less fuel, better performance on every job.

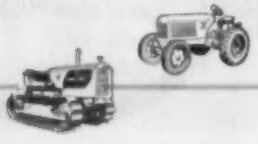
See this new Oliver, drive it yourself! Check its power, handling qualities and many attachments. Check, too, its many standard features—6 forward speeds, double-disc brakes, ball-type steering. See your Oliver Industrial Distributor, soon!

OLIVER

THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Illinois

a complete line of industrial wheel and crawler tractors



DELIVERING WATER CHEAPER

OMAHA, NEBRASKA
To avoid serious traffic jams while constructing its 48" pump discharge line through busy Omaha, Metropolitan Utilities District engineers constructed a 200-foot tunnel 25 feet below ground level. The half-mile Dresser-Coupled steel line will deliver water to a new reservoir.

Busy Traffic Scarcely Knew It

OMAHA AVOIDS TIE-UPS LAYING DRESSER-COUPLED STEEL LINE THROUGH TUNNEL

Like Omaha, growing cities everywhere are thoroughly familiar with the many advantages of steel water pipe joined with Dresser Couplings.

This modern type of construction provides city engineers and contractors with a virtually "packaged pipe line"—easy to lay out and assemble, readily adaptable to job conditions, predictable as to cost.

And speaking of costs, lighter weight steel pipe reduces budget expenditures for installation. Long, strong pipe lengths call for fewer joints, speed job completion. And flexible, bottle-tight Dresser Couplings go on fast, eliminate many specials, make leakage allowance for joints unnecessary. Resilient Dresser gaskets absorb shock, vibration.

In addition to assuring low over-all installed cost, a Dresser-Coupled steel water line sustains high carrying capacity, "lives in the ground" without maintenance . . . results in *delivering water cheaper.*

✓ ***BE SURE*** **you get the best line at the best price. Always put steel pipe and Dresser Couplings in your specifications.**

DRESSER®

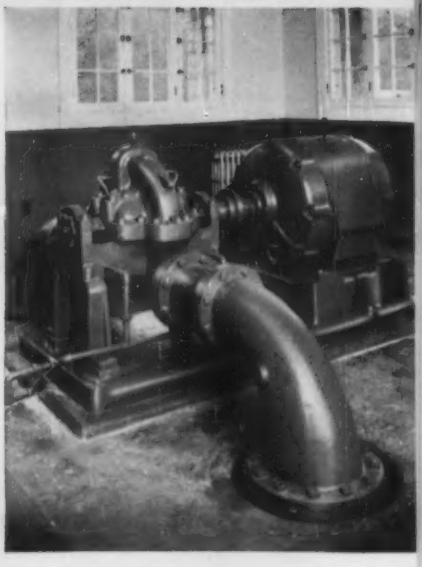
SAVE TIME, MONEY AND TROUBLE — THE DRESSER WAY

Dresser Manufacturing Division, 69 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston; 101 S. Airport Blvd., S. San Francisco. Sales Offices also in: New York, Philadelphia, Chicago, Toronto.

NEW BABSON PUMPING STATION
—one of three serving Gloucester, Mass. Consulting engineers: Metcalf & Eddy. Gen. contractor: Ralph P. Hall. Elec. contractor: Shepherd & Betts.

FACT: Reliable electrical link between utility and station is provided by a Westinghouse outdoor power center (4160/480 volts). Power is fed underground to control center in the station.

FACT: Centralized operation of the entire station is assured by this Westinghouse control center. Right cubicle was supplied empty to provide space for pressure gauges and flow meters.



FACT: This Westinghouse 200-hp, 1800-rpm, drip-proof motor drives main pump at a rate of 3400 gallons per minute. Installation also includes 75-hp auxiliary motor and pump.

FACT:

One 200-hp Westinghouse motor pumps 4,500,000 gallons a day

Operating simplicity is a keynote of Babson Pumping Station, erected recently at Gloucester, Massachusetts

FACT: This pumping station has been engineered so that a single pump, driven by a 200-hp Westinghouse Life-Line® motor, handles the entire station water supply—rated at 4,500,000 gallons a day.

FACT: Operating simplicity is further carried out with a Westinghouse control center. In a single enclosure, it groups controls for the main pump and stand-by motor, main controls for lighting circuits, and primary circuit controls that are interlocked with a Westinghouse outdoor power center.

For details on this case history and the Westinghouse team that helped coordinate it electrically . . .

J-94027

Call *The Man With The Facts,* the construction sales engineer in your nearest Westinghouse office

YOU CAN BE **SURE**...IF IT'S

Westinghouse

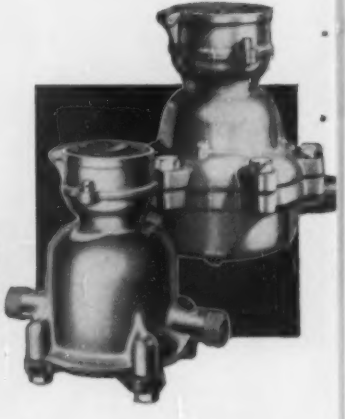
Water is vital...

Badger meters conserve it better!

More than 37-billion cans of food were used by American families last year . . . yet it took *more water than produce* to make these canned products available. For example, more than 15 pounds of water were required for every pound of canned vegetables sold.

Little wonder, then, that Badger meters serve so importantly in thousands of communities. They make certain that homes and industries receive a fair share of the water supply . . . pay only for the water they use.

Famous Badger meters measure water precisely . . . help eliminate waste . . . make water departments more efficient and self-supporting. And service records prove the dependability of Badger meters . . . prove that there are no finer water meters to be had — anywhere!



Badger Water Meters

Badger Meter Mfg. Co.
Milwaukee 45, Wisconsin

"Measuring the water of the world for 50 years"

Ore and Coal Mines

Coke Ovens

Blast Furnaces

Pipe Plants

our integrated operation means undivided control of quality

U.S. cast iron PIPE

FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

We are a wholly integrated pipe-producing unit — with mines, quarries, blast furnaces and laboratories under one direction and control.

What does this mean to you, a pipe buyer? It means that we are in the best possible position to take *complete* and undivided responsibility for the quality of our product . . . from raw materials to finished pipe.

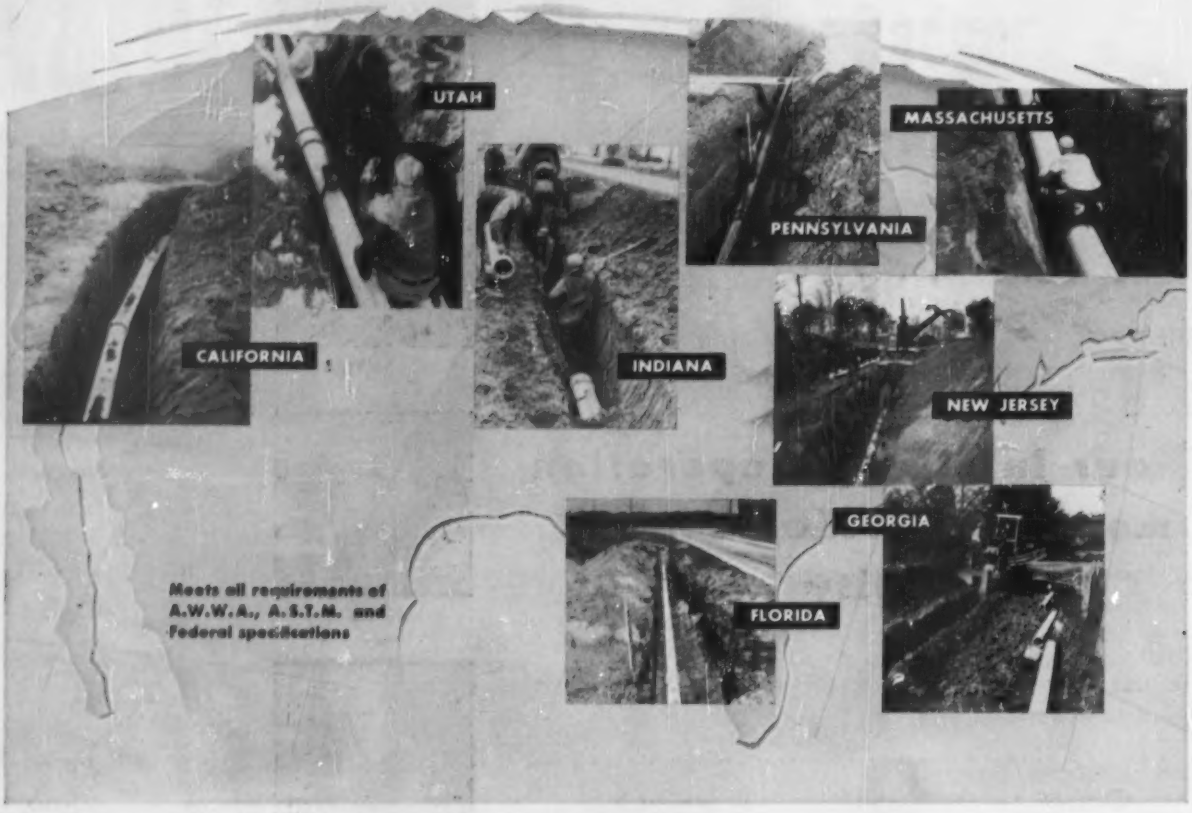
In addition to being able to control the quality of pipe-making raw materials at their sources, our Quality Control of pipe production gives further assurance to customers that the quality level of U. S. Cast Iron Pipe is in excess of standard specifications. Our pipe is produced to *our own* quality control specifications, more exacting than the established specifications under which cast iron pipe is normally purchased.

U. S. PIPE & FOUNDRY COMPANY

GENERAL OFFICES: BIRMINGHAM 2, ALABAMA

A wholly integrated producer . . . from mines and blast furnaces to finished pipe.

Setting new standards—everywhere...



Transite Pressure Pipe and Ring-Tite Coupling speed water line assembly, lower installation cost

IN COMMUNITY after community, proof that Transite® Pressure Pipe and Ring-Tite® Coupling speed water line assembly and cut installation costs is reflected in such contractor comments as these:

"Exceeded by far, the speed anticipated under job conditions."

"Based bid on 400 feet a day, actually laid over 700 feet."

"Established an entirely new concept of installation savings."

These new records for speedy installation have been accomplished despite adverse terrain, weather conditions and the presence of muck and mud in many of these locations. That is why, whatever your water line problem it will pay you to learn all about Transite's many advantages.

* * *

Write for the new Transite Brochure, TR-142-A, Johns-Manville, Box 60, New York 16, N. Y.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville TRANSITE PRESSURE PIPE

THE ASBESTOS CEMENT PIPE WITH THE NEW RING-TITE COUPLING

2-WAY RADIO MULTIPLIES PATROLMEN'S EFFICIENCY

New Portable Field-Fone Provides Instant Contact with Headquarters, Other Patrolmen or Squad Cars

This smaller and lighter weight, self-powered radio is now easily carried everywhere. Clear FM voice conversations can be carried on over surprisingly long distances with a unit less than half the size of comparable equipment.

The extreme compactness of the Field-Fone is achieved through miniaturization of parts and the use of printed circuits. Nothing has been left out to impair the excellent performance of either the transmitter or receiver.

Field-Fones operate either on long-life dry batteries or rechargeable wet batteries.

PAK-FONE THE 2-WAY PORTABLE RADIO WITH 3-WAY POWER SUPPLY FOR CONTINUOUS OPERATION

The Pak-Fone is a complete communications center. It may be plugged into an ordinary 115 volt AC power circuit, attached to an automobile storage battery or operated from its own self-contained batteries. In any emergency, the Pak-Fone is ready for instant vital service. Loud speaker reception.

Field-Fones and Pak-Fones will be demonstrated in your city upon request. Write for complete details.

AMERICA'S LARGEST EXCLUSIVE MANUFACTURER OF 2-WAY PORTABLE RADIO EQUIPMENT

ir

INDUSTRIAL RADIO CORP. 428 N. Parkside Ave., Chicago 44, Ill.

from one to 150 cubic yards per hour

If you process and sell your sludge cake . . . and if you don't, you should . . . you need a Royer Sludge Disintegrator. This efficient machine takes sludge cake from the drying beds and shreds, pulverizes and aerates it into a readily sold fertilizer. A steady income from its sale replaces the usual expense of sludge disposal.

And there is a Royer available to take care of your needs . . . from 1 to 150 cu. yards. per hr. The small Junior is easily fed by one man hand shoveling . . . the huge NSYP-E is built with extension hopper for tractor bucket feeding . . . others in capacities between these ranges. Write for details.

Also available in the 150 cubic yard per hour capacity is an "over-the-road" model, powered with a 36 HP air cooled Wisconsin gasoline engine and mounted on four 6.00x16 tires, with tow bar and automotive steering (Model NSYP-EG).

ROYER foundry & machine co.

179 PRINGLE ST., KINGSTON, PA.

ROYER

PRESCRIPTION Rx FOR BETTER TRAFFIC CONTROL

Traffic Control, parking, and parking enforcement can become an efficient and economical operation in your city —when you install the dependable KARPARK TWIN-O-MATIC or UNIMATIC parking meters. They're superbly built by the famous HERSCHEDE HALL CLOCK COMPANY, makers of America's finest clocks.

FLEXIBLE—
tailor-made to suit your own requirements for coin combinations and time intervals.

EFFICIENT—
simple to operate, highly visible for easy enforcement, ruggedly built for accurate timing in any kind of weather.

ECONOMICAL—
provide substantial savings in law enforcement, maintenance, and replacement.

KARPARK TWIN-O-MATIC
Times two cars with one installation. Adjusts to any desired change in regulations. Reduces maintenance and collection costs to unheard-of lows. Ruggedly built for long life.

KARPARK UNIMATIC
For single car parking. Can be used for an entire system of single car parking, or, when used with Twin-O-Matic, can be placed at street ends and special single locations.

Available with
Automatic Dump System, Sealable Boxes, or Open Top Boxes.

For complete data, write to

THE KARPARK CORPORATION
CINCINNATI 6, OHIO

In Canada TWIN METER CO. OF CANADA, LTD. 5002 Park Avenue, Montreal 8, Quebec

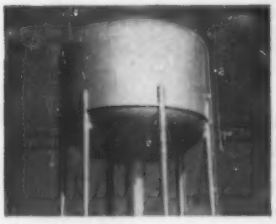
Beautify as you protect city equipment, water and sewage works, fences, stop signs, fire hydrants, street lights, tanks, trucks, etc.!

RUST-OLEUM saves time, money, and metal!—and beautifies as it protects! Brush RUST-OLEUM 769 Damp-Proof Red Primer right over the remaining rust after scraping and wirebrushing to remove rust scale and loose rust! Easy as that to save even badly rusted metal! For colorful beauty, use any of RUST-OLEUM's distinctive finish coatings in ALUMINUM, RED, WHITE, GREEN, GRAY, BLUE, ORANGE, BLACK, and many others. RUST-OLEUM resists rain, snow, sun, fumes, heat, salt water, salt air, weathering, etc. to give you colorful, lasting protection. See your local classified telephone directory under Rust Preventives or Paints for nearest source of supply, or mail coupon today.

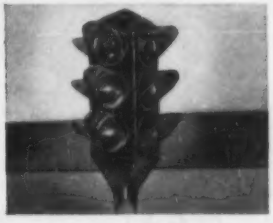
STOP RUST! with

RUST-OLEUM®

Available in Aluminum, Black, White, Red, Green, Gray, Blue, Orange and many others.



Water tanks, fuel tanks—all need RUST-OLEUM decorative beauty and lasting protection.



Stop lights, stop signs, and fire hydrants are another way to utilize RUST-OLEUM protection.

RUST-OLEUM matches such original manufacturer's colors as Harvester, Caterpillar, and many others for your tractors, trucks, etc.

Use bright RUST-OLEUM colors on your tanks, pumps, pipes, and machinery indoors and out.

Street lights need RUST-OLEUM's year 'round resistance to salt water, salt air, rain, snow, sun, fumes, heat and weathering.

You'll find RUST-OLEUM at work in water and sewage plants all over the country—giving decorative beauty and lasting protection.

ATTACH TO YOUR LETTERHEAD AND MAIL TO:

RUST-OLEUM CORPORATION, 2511 Oakton Street, Evanston, Illinois

- ☐ Please Send Me A FREE TEST SAMPLE To Apply Directly Over Sound Rusted Surfaces.
- ☐ Complete Literature With Color Charts.
- ☐ Have A Qualified Representative Call.
- ☐ Nearest Source of Supply.

See Rust-Oleum Demonstrated Booth 347 Plant Maintenance Show

FELKER DI-MET

MODEL 200

Ask for literature on Model 200 and other DI-MET Concrete Cutters!

This low-cost concrete cutter available with choice of equipment; insures extra economy

Here's maximum concrete cutter *economy* in a heavy duty machine. DI-MET Model 200 is more economical because it can be purchased as a *Basic Unit*—without accessories. Plenty of power, too! A big 13.5 Wisconsin engine drives an 18" blade...cuts to 6½" deep, right or left hand operation. Hydraulic lift and retardant prolongs blade life.

Add Accessories as you Need Them... *power drive and coolant pump assemblies easily field installed. Starter and generator available on original order only.*

Left: Power Drive Assembly

FELKER DI-MET SINCE 1924

FELKER MANUFACTURING CO. TORRANCE • CALIFORNIA

World's Largest and Oldest Manufacturer of Diamond Abrasive Cut-Off Wheels and Machines

EXPANDING ROOT CUTTER SEWER CLEANER

Fits in on Every Sewer Cleaning Job
Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

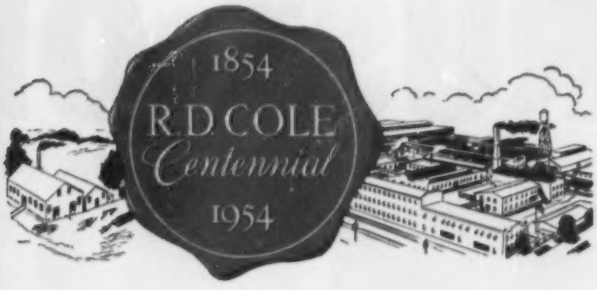
Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Open and in action removing roots and caked sediment like this.

Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY

108 East Walnut St. Nappanee, Ind.



THE FIRST HUNDRED YEARS

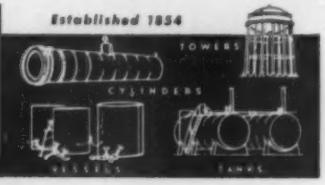
FROM a small iron-works in 1854, we have been fortunate in growing to be one of America's largest metal fabricating industries . . . For the privilege of celebrating our Centennial, we express our appreciation for the friendship of four generations of customers, and the loyalty of four generations of workers.

R.D. COLE

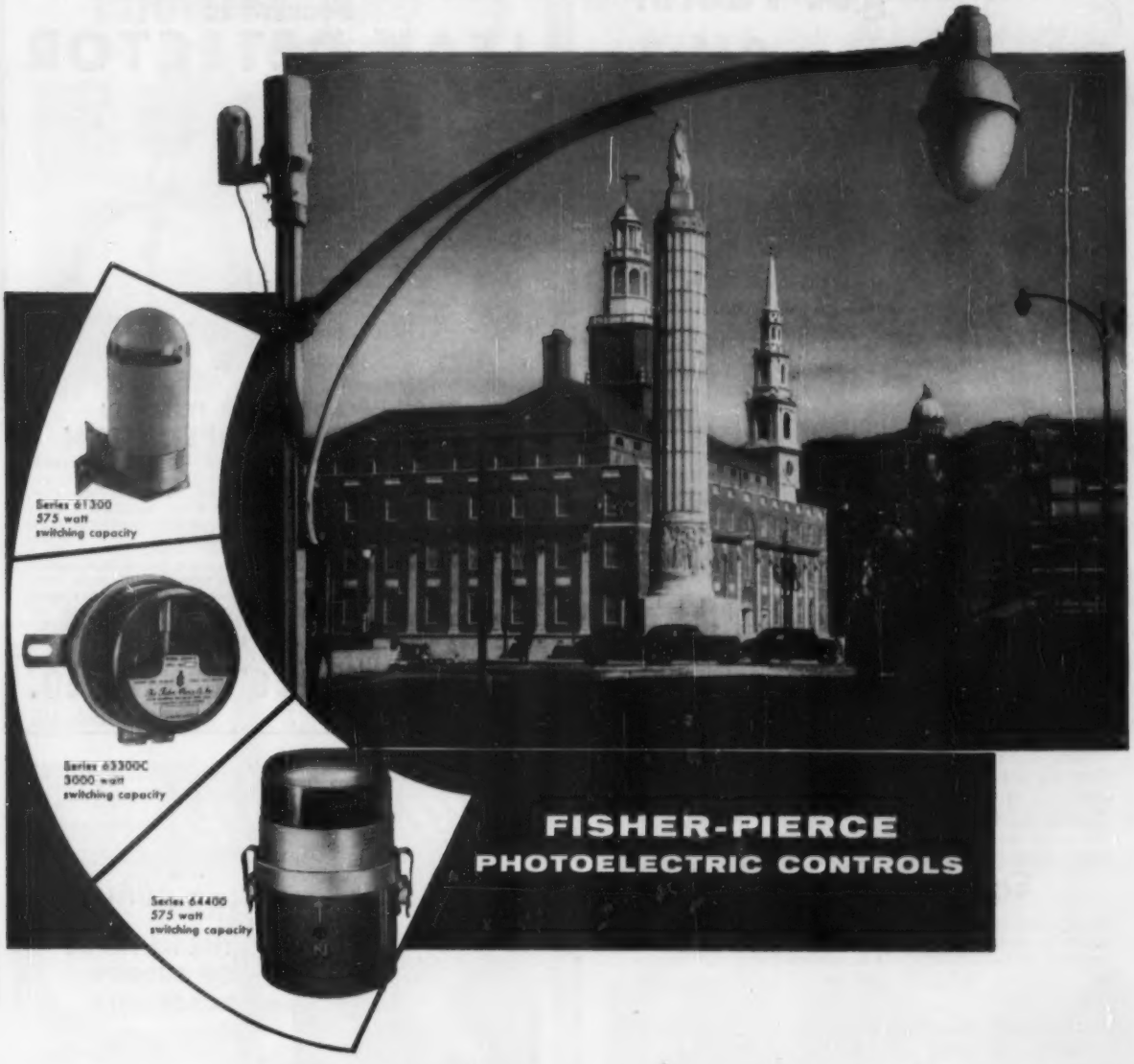
MANUFACTURING CO.

NEWNAN, GA.

Established 1854



CONTROLLING STREET LIGHTS IN PROVIDENCE, R. I.

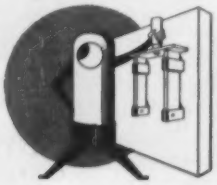


Motorists and pedestrians in Providence can thank their City Government for authorizing The Narragansett Electric Company to install dependable, automatically controlled street illumination.

The use of Fisher-Pierce street lighting controls assures dependable *automatic* illumination of streets the moment daylight drops below a safe value. Because F-P controls are photoelectric, they operate regardless of the hour, the season or the weather.

On the job in Providence since 1946, F-P controls now number about 3000. Narragansett engineers report favorable installation economics *and* an extremely low failure rate — only 2.29% of *all* units during a recent 12-month period.

Long, dependable service of F-P controls — in street lighting control systems in Providence and hundreds of *other* communities — is the basic reason Fisher-Pierce is recognized as a *leader* in its field.



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NORTHERN ELECTRIC CO., Ltd.

get Faster ... Safer Better Quality WINTER CONCRETE at Low Cost

by using

SOLVAY CALCIUM CHLORIDE

GAIN 9 ADVANTAGES BY USING SOLVAY Calcium Chloride in Any Type of Concrete . . . for Every Construction Job

1. Quicker Set. 2. Reduced Overtime Finishing. 3. High Early Strength. 4. Greater Final Strength. 5. Faster Form Removal. 6. Saves Delay Between Operations. 7. Extra Cold Weather Protection. 8. Uniform Dependable Curing. 9. Increased Density and Hardness.

SEND FOR FREE BOOK—"The Effects of Calcium Chloride on Portland Cement" gives you important information on the use of calcium chloride in winter concrete. Mail coupon below for your free copy.

FOR READY-MIX USERS

Your ready-mix supplier can deliver your cold weather concrete containing SOLVAY Calcium Chloride. Assure yourself of faster, safer and better quality winter results by specifying SOLVAY Calcium Chloride when you order ready-mix.

SOLVAY Calcium Chloride NOW IN NEW 25 LB. BAG!

- Provides Positive Measurement Control!
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SOLVAY PROCESS DIVISION
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Please send me without obligation or cost:

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CITY ..... ZONE ..... STATE 61-1

HERE IS A REVOLUTIONARY NEW POCKET-SIZE LEAK DETECTOR

THAT WILL PAY FOR ITSELF IN ONE COMPLETE OPERATION

Sensitive—as only modern electronics knows sensitivity.

Compact—weighs only 2¼ pounds and fits conveniently into a coat or jacket pocket.

Simple—any maintenance man quickly learns how to use it. In one typical small city, meter readers used them to find an average of three leaks per day.

Rugged—Operating records show it working perfectly in all sorts of weather, even when handled roughly by different operators.

Efficient—one man can do a complete job of leak detection well. In one small city, these little detectors traced out leaks amounting to almost 10% of the daily pumpage.

Write for prices and complete information.

PRECISION ELECTRONICS CO.
9101 King St. Franklin Park, Ill.

Big Beam AUTOMATIC EMERGENCY LIGHTS

GUARD AGAINST THE HAZARDS OF SUDDEN BLACKOUTS

Big Beam Model 2ATW with storage battery and built-in charger that keeps battery fully charged at all times. Variety of models to choose from.

Sudden blackouts breed confusion, panic, property damage, bodily injury — even loss of life. You can have completely dependable protection against sudden blackouts by installing Big Beam automatic emergency lights. (Plug into any convenient lighting outlet.) Then whenever regular lights fail, your Big Beam will provide hours of bright, safe illumination.

Big Beam PORTABLE ELECTRIC HAND LAMPS

Model No. 211 1500-Foot Beam

Model No. 166 with SEALED BEAM Bulb

Model No. 408F Flare and Lantern

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IN CANADA: Bernard Marks & Co. Ltd., 459 Church St., Toronto 5, Ont.

✳ COUNTRY ROAD
✳ CITY STREET
✳ FOREST TRAIL

ALL-WHEEL STEER
MEANS TOP PERFORMANCE
everywhere

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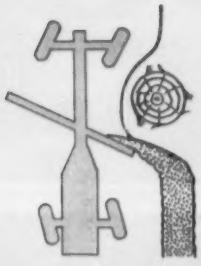

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ONLY A-W GRADERS HAVE ALL-WHEEL STEER

Austin-Western
Power Graders · Motor Sweepers
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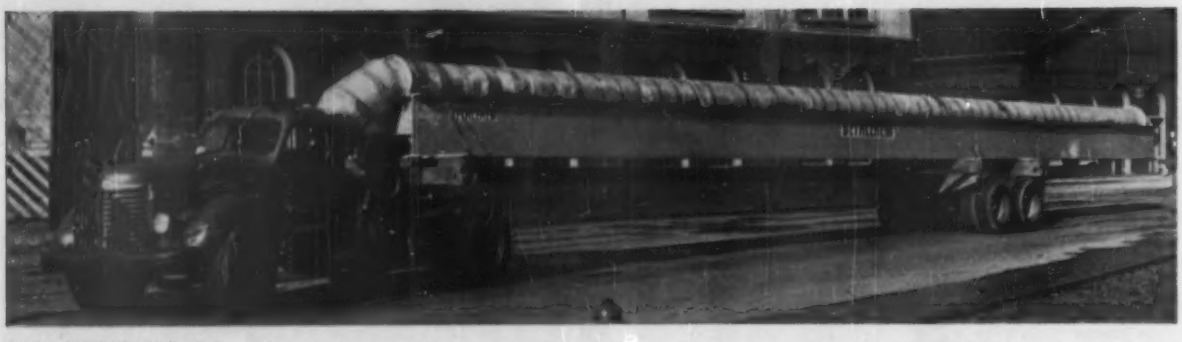
Construction Equipment Division

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

Bethlehem Steel Pipe On The Job

IN FORT SMITH, ARK. — Nearly 12,000 feet of 22-inch Bethlehem Tar-Enameled Pipe was used in the new feeder main that supplies a fast-growing section of Fort Smith.

NEAR DECATUR, GA. — Laying well over four miles of 30-inch coated and wrapped Bethlehem Steel Pipe. The 40-foot lengths were joined by mechanical couplings.



PHILADELPHIA, PA. — Shown being trucked from our Steelton, Pa., fabricating works, this all-welded H-Beam pipe bridge will span a railroad right-of-way in suburban Philadelphia. The pipe is 24 in. ID; the bridge is 83 ft long between field seams.

The list of municipalities using Bethlehem Tar-Enameled Steel Pipe is long — and getting longer all the time. It includes New Orleans, Cincinnati, Minneapolis, New York, Duluth, Washington, Omaha, Wilkinsburg, Pa., Bay City, Mich., Winston-Salem, N. C., and Colorado Springs, Colo.

When you're in the market for a new water or sewage line, we suggest that you consider the many advantages of Bethlehem Tar-Enameled Steel Pipe. It has the great strength, shock-resistance and freedom from leaks that only steel pipe can offer. What's more, its smooth, uniform coating of coal-tar enamel resists corrosion and incrustation, ensures a high rate of flow year after year. Available in 40-ft lengths, and in all diameters from 18 in. ID to the largest permitted by common carriers.

If you'd like more information, phone or write the Bethlehem sales office nearest you.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM *Tar-Enameled* STEEL PIPE

THE SUN NEVER SETS ON Flexible

SEWER-CLEANING EQUIPMENT

Around the World more "Flexibles" are working than all others combined. Pictured is a Flexible SeweRodeR cleaning sewers the "easy way" in Honolulu, Hawaii, where "we grow the longest and healthiest roots in the world," as one of their crew foremen puts it.

Similar scenes take place in Venezuela, Colombia, Israel, India, Philippines, Australia, France, Italy, Sweden, South Africa and many other countries, around the clock.

Yes, in any language it is easy to understand why the compact, efficient SeweRodeR represents the last word in modern, fast sewer-cleaning. It rods up to 3,000 feet per day at a cost of less than 3¢ per foot—operates in congested areas without tying up traffic—and elevates human dignity by keeping the men on the street level and out of the manholes.

FREE DEMONSTRATION INVITED

Flexible SALES CORPORATION

3786 DURANGO AVE., LOS ANGELES 34, CALIF.

(Distributors in Principal Cities)

AMERICA'S LARGEST LINE OF PIPE CLEANING TOOLS AND EQUIPMENT

McDowell County, West Virginia Voters Endorse Automatic Voting Machines

Early this year McDowell County, West Virginia acquired 185 Automatic Voting Machines under a rental-purchase agreement. This agreement gave the County the option to return the machines at the end of the rental year, and be relieved of any further rental payments. The question was placed on the voting machines at the 1954 General Election and the vote was 14,471 to 1986 *against* the termination of the rental contract, and in addition the voters authorized a bond issue to purchase the machines outright by a vote of 13,487 to 1,562. Such an overwhelming vote in favor of machines is evidence of "Automatic's" popularity.

INVESTIGATE MACHINES FOR YOUR COMMUNITY

AUTOMATIC VOTING MACHINE CORP.

JAMESTOWN, NEW YORK

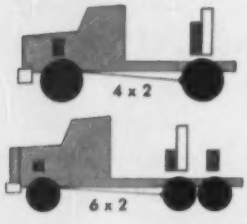
"More than just a Truck—" you want in a

This basic unit of heavy-duty driving power opens up a whole new concept of on-the-job achievement...designed to out-perform mass produced, mass marketed trucks on the basis of extra power, dependability and economy of operation.

More of Everything in these Improved Additions *with Advanced...*

Advanced Math-Matic Design – in every feature of FWD—correctly proportions power to weight on front and rear axles . . . making every pound of load help haul itself! Each wheel's load only makes it grip harder, turning every ounce of power into more controllable traction, greater steering safety.

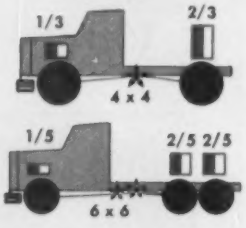
ORDINARY REAR-WHEEL-DRIVE TRUCKS



Note how power is wastefully concentrated on one axle.

■ *Proportion of weight on each axle*

FWD WITH ADVANCED MATH-MATIC DESIGN



Note how power is correctly proportioned to weight distribution.

P *Proportion of power on each axle*

WRITE TODAY . . . for illustrated product folders on units in the weight category you normally use. Four and six wheel drive units from 14,500 to 60,000 lbs. G.V.W.

We'll also send your free copy of "The Truck That Went to College"—report of 7 years' truck research by the University of Wisconsin's College of Engineering.

BUILDERS OF AMERICA'S FWD FOREMOST HEAVY-DUTY TRUCKS

MATH • MATIC DESIGN

THE FOUR WHEEL DRIVE AUTO COMPANY

yet...more of Everything Truck!

★ Higher power-weight ratio!

★ Up to 82% greater tractive ability!

★ 30 to 37% longer tire life!

★ Greatest operating safety!

★ Greater load-carrying capacity!

★ Better weight distribution!

★ At no increase in fuel consumption!

CUSTOM-ENGINEERED ! More Driving Power Less Dead Weight thru Stronger, Lighter Alloy Steels and Advanced Math-Matic Design!

Now—more than ever—more of the weight is working weight in FWDs. New, lighter, tougher steels cut dead weight, increase FWD load-carrying capacity by improving power-weight ratios.

WHAT'S YOUR HEAVY-DUTY TRUCKING PROBLEM?
Along our nation's highways, throughout the world's oil fields, over the rugged terrain utility crews must travel ...anywhere there's tough, heavy work to be done—you'll find FWDs shouldering more than their share of heavy-duty problems. That's what FWDs are for... the tough jobs in tough places, where conventional trucks can't even travel.

CLINTONVILLE, WISCONSIN, *Canadian Factory* KITCHENER, ONTARIO

for lasting quality construction castings

SEE NEENAH FIRST

More and more building contractors specify NEENAH fine quality construction castings FIRST. The Neenah line also includes manhole frames and covers, catch basin inlets and many other items to meet any construction requirement. Write today for your free copy of Catalog "R," second edition: 140 pages with pictures and description.

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SYMBOLIC "FOUNTAIN SQUARE"

Heart of Cincinnati is Fountain Square. Its ever flowing water memorializes the love and respect of a businessman and civic leader for his brother-in-law, Tyler Davidson. Since 1871 this memorial has been a landmark amidst the busy city.

In many interesting locations you'll find ***FERRO*** signs . . . visible day or night; permanent porcelain enamel fused on finest steel.

On any street, road or highway, ***FERRO*** is the ***sign of good government.*** For full details, write:

FERRO ENAMELING CO.

1100 Fifty-Seventh Avenue Oakland 21, California

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LOW COST
ANTI FREEZING
3/4" COMPRESSION HYDRANT

MURDOCK Jr.

Made of Grade A Bronze and Grey Iron castings. Precision-machined to give decades of dependability. Thoroughly tested before shipment. Unexcelled for low-cost, all-weather service.

Write for Catalog and Prices

THE MURDOCK MFG. & SUPPLY CO., CINCINNATI 2, OHIO

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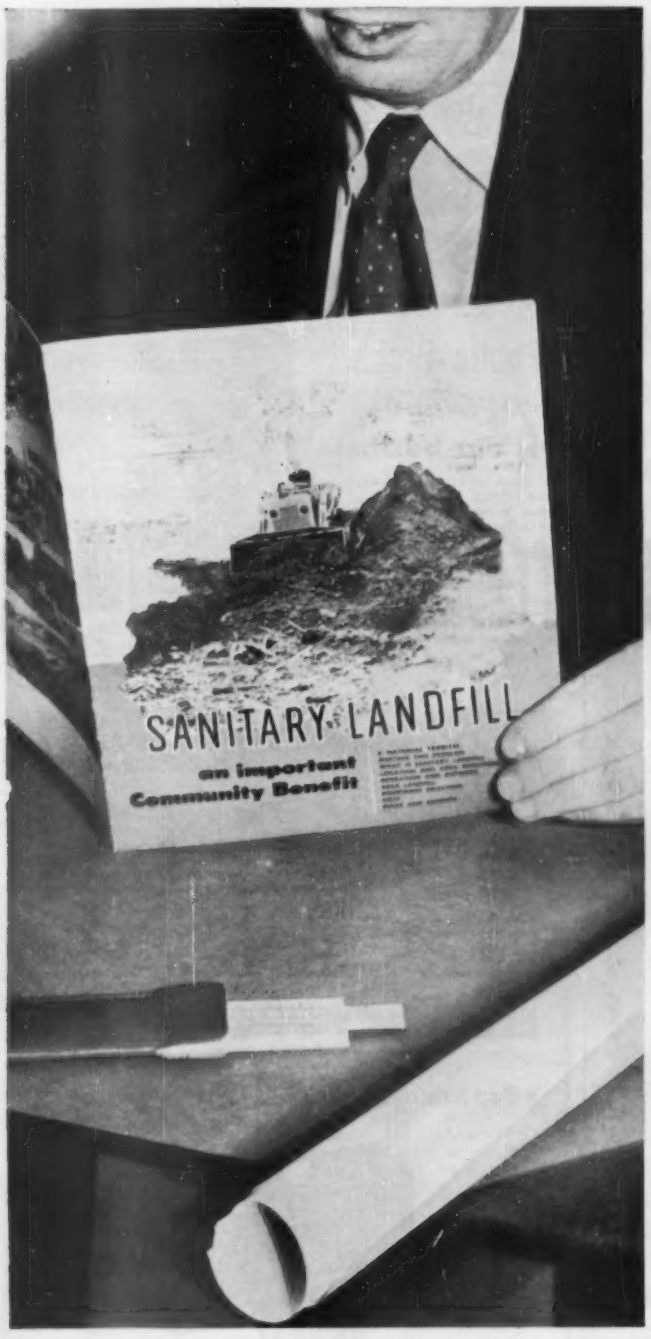


Here's real help for

Selling Community Health

New Allis-Chalmers booklet tells — illustrates how landfill method can meet problem of sanitary refuse disposal efficiently and economically.

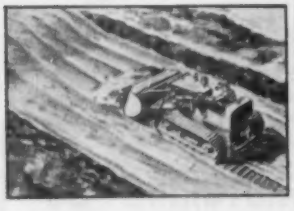
Disposing of garbage is a recognized headache for any community too small to make incineration feasible. Explaining how the sanitary landfill method can do the job is a difficult challenge. That's why sanitation officials will find this new Allis-Chalmers booklet especially helpful.

Titled "Sanitary Landfill — An Important Community Benefit," it covers the subject step by step: (1) analyzing the problem, (2) how sanitary landfill meets it, (3) what the basic requirements for landfill are, (4) method of operation, and (5) selection of equipment. Photographs and drawings are used throughout the booklet to make the descriptions as clear as possible.

If your community faces the problem of sanitary, yet economical disposal of refuse, it will pay you to get a copy of this helpful booklet now. Just call your nearby Allis-Chalmers dealer (or write direct). He'll be glad to send you one and to give you any additional information you may want. Booklet No. MS-895-5210.

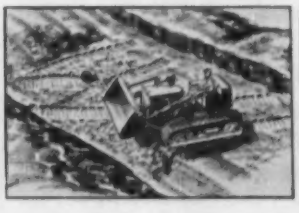
ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Illustrations from section on trench method of landfill.



Trench 75-400 ft. long, 3 ft. deep, 15-25 ft. wide may be excavated, using dirt to build ramp along one side.

Incoming trucks dump from ramp into trench. Dumped refuse is then spread and compacted by crawler tractor.



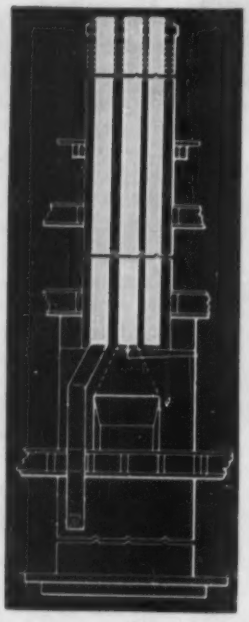
Successive layers are compacted until a cell is formed in trench, consisting of refuse dumped in one day's operation.

Top and open end of cell are covered by earth seal taken from second trench adjacent and parallel to first.

CLAY FLUE LINING

Available in round, square and modular sizes — regular fired or Glazed.

CUTS FIRE ALARMS
REDUCES FIRE LOSSES
LOWERS INSURANCE RATES



Built-in protection! Clay Flue Lining permanently fireproofs the chimney . . . gives proved protection against the second most common cause of destructive fires.

Better draft! The chimney stays smooth and clean . . . draws better . . . with no dangerous accumulations of soot.

Lasting quality! Acid gases in smoke and fumes can't affect scientifically fired clay. It doesn't crack from high temperatures . . . doesn't flake off . . . *never wears out!*

HELP PROMOTE BETTER FIRE PROTECTION IN YOUR COMMUNITY . . .

Defective flues and chimneys are responsible for an annual fire loss of 25 million dollars — second only to fires caused by careless smoking. To help stop this needless waste in your community . . .

CLAY FLUE LINING *Institute*

WRITE FOR "A Standard Ordinance for Chimney Construction," recommended by the National Board of Fire Underwriters. Urge its adoption in your city's building code!

You Can Trust This Mark of Quality

CLAY FLUE LINING INSTITUTE
6118 First National Tower, Akron 8, Ohio

CONTACT AN INSTITUTE MEMBER WHEN YOU WANT THE BEST

American Vitrified Products Co. • Dee Clay Products Co., Inc. The Evans Brick Co. • The Kaul Clay Mfg. Co. • The Kopp Clay Co. • Larson Clay Pipe Co. • Malvern Flue Lining, Inc. Mill Hall Clay Products, Inc. • Natco Corp. • Peerless Clay Corp. Straitsville Brick Co.

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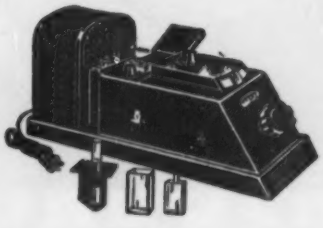
Experts in Metal Fabrications since 1886

Stewart IRON and WIRE FENCES

KLETT SUMMERSON
ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street New York, N. Y.

Slash Refuse Collection Costs!

with the All-New

HEIL COLECTOMATIC

...Check these time and money-saving features...

LOW LOADING SILL for more comfortable loading. It's wide enough to accommodate two men with plenty of elbow room.

LOWER MAINTENANCE

✓ ONLY 3 HYDRAULIC CYLINDERS to maintain! Compare this to the usual 4 or 5 cylinders in other rear loading units. Fewer cylinders and less mechanical linkage reduce maintenance problems.

✓ BETTER SERVICE ACCESSIBILITY! By opening the sectional panels on both sides of the tailgate, the entire working mechanism is exposed for easy reach from a standing position.

✓ STOPPAGE CONTROL PREVENTS DELAYS! If refuse should stick between hopper and packer plate, a quick, simple adjustment drops hinged hopper away from packing plate. No time lost digging out jammed material.

FASTER CYCLES

✓ "BULLDOZER" PACKING CYCLE completed in 23 seconds! Packing plate forces refuse out of hopper and continues to roll the material into the body with a bulldozing action.

✓ FULL AUTOMATIC OPERATION with one finger-tip control lever. Safety door closes, the load is swept out of the hopper and packed into the body, and the safety door opens ready for the next load.

✓ FAST DUMPING! Flat body floor has no wheel housings or ramps to obstruct the free flow of refuse. Heil precision-built hoist, and 3-in. body taper from front to rear, assure easy, quick discharge.

GREATER COMPACTION

✓ TONS OF PRESSURE exerted against refuse by mold board type packing plate pack the maximum amount of material into the big body. Fewer trips to the dump save money!

✓ OTHER MONEY-SAVING ADVANTAGES

Sealed body for clean, odor-free collection • Smart, attractive appearance • Quiet packing operations • Greater maneuverability • Fits any standard truck chassis.

Ask for a demonstration of every new feature!

THE HEIL CO.

DEPT. 4315

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Factories: Milwaukee, Wis. — Hillside, N. J.

Heil Sales Offices: New York, Union, N. J., Atlanta, Cleveland, Milwaukee, Chicago, Kansas City, Denver, Dallas, Los Angeles, Seattle

The HEIL Co., Dept. 4315, 3043 W. Montana St. Milwaukee 1, Wis.

Gentlemen: Please have your representative call to arrange a demonstration of the new Heil Colectomatic.

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GB-51

VINEGAR PROCESSING ROOM
H. J. HEINZ COMPANY

Skidmore, Owings & Merrill, Architects—Engineers, New York, N. Y.
Jaros, Baum & Bolles, Consulting Engineers, New York, N. Y.

H. J. HEINZ COMPANY
chooses INERTOL® PAINTS to FIGHT ACID FUMES

• When H. J. Heinz Company constructed a new vinegar manufacturing plant in Pittsburgh, Pennsylvania, a tough problem had to be licked. Strong acetic acid fumes would envelope and corrode both the interior and exterior surfaces of the building. Inertol Co., Inc., was consulted, and Inertol coatings were specified. The result is that the Heinz Company got the durable, long-term protection it needed.

Inertol makes a complete line of industrial maintenance paints. Each coating is designed to do a specific job—and lower maintenance costs, too. The paints specified for the Heinz Company may solve your painting problems—or perhaps Inertol FLORWEAR® will help send your maintenance costs down. FLORWEAR is rubber-based—made for concrete floors that take a beating from chemical fumes. It's chemical- and wear-resistant. Sheds water—won't water-spot. Comes in light, medium and dark gray and deep red.

Send for our *Free* folder and color card MT-2. Do it today. Just tear out this page—jot down your name, title, firm name and address in the margin and mail to us.

Inertol

INERTOL CO., INC.
MAINTENANCE PAINTS DIVISION
485 Frelinghuysen Ave., Newark 5, N. J.
27-M South Park, San Francisco 7, Calif.
INERTOL PROTECTION MEANS LOWER COST PER YEAR

A SURE SIGN . . . OF EFFICIENT TRAFFIC CONTROL

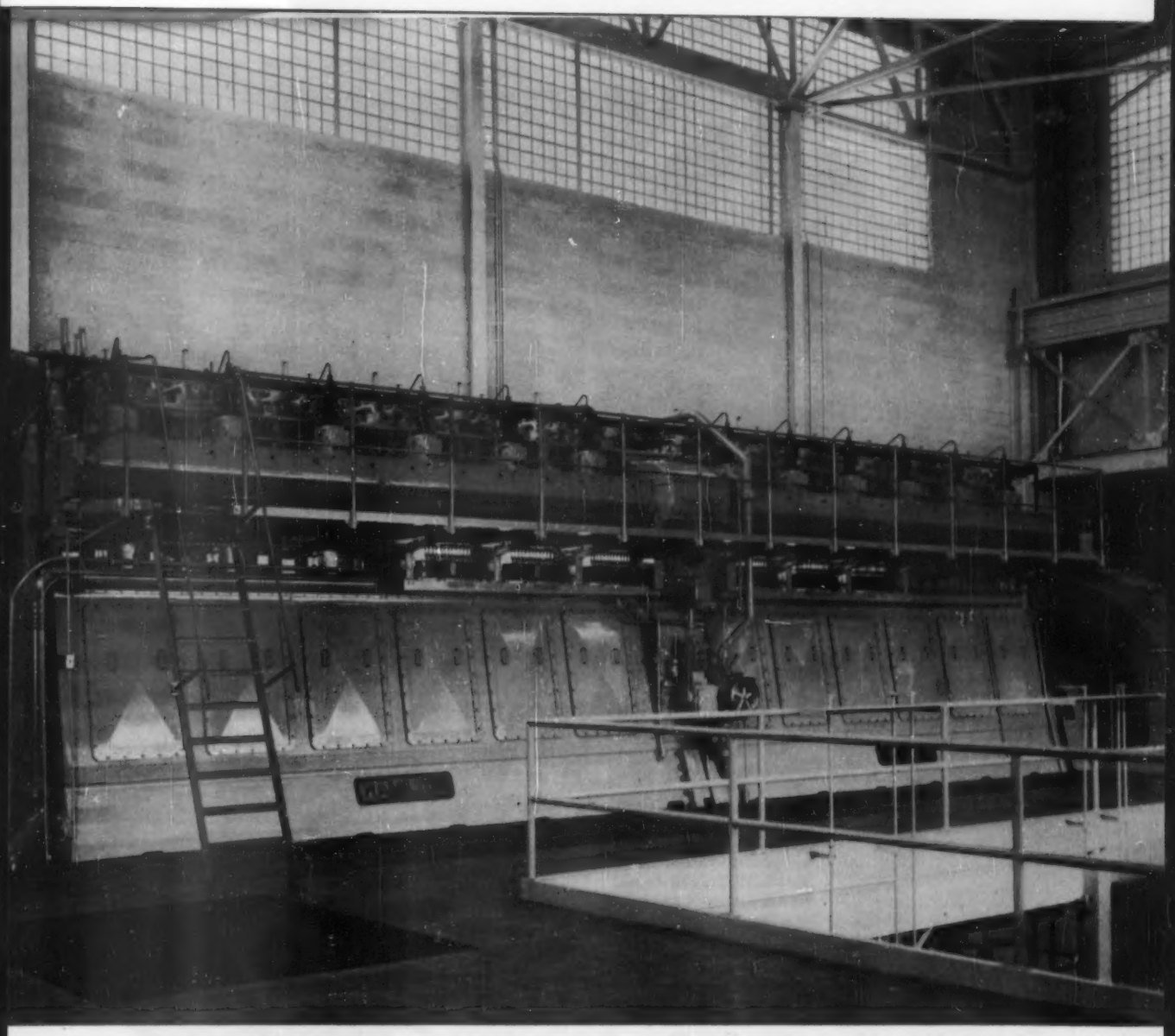
Signs by MIRO-FLEX

Select safety and traffic control signs from America's finest complete sign line. Make your choice from either plain embossed or reflectorized styles. All MIRO-FLEX signs are embossed to not less than 0.100 of an inch and are finished in highest-grade enamels baked in thermostatically-controlled ovens.

See your Miro-Flex Sign representative or write for complete catalog and prices.

Stop signs are available in either black on yellow or white on red. Reflectorized types may be had with either glass or plastic buttons...reflective sheeting or beaded background. When you consider all the features, you know that MIRO-FLEX signs are *the most readable, strongest and longest-lastings signs available.*

THE MIRO-FLEX CO., INC.
1824 EAST SECOND WICHITA, KANSAS



L. C. Pettibone, Supt., Electric Light & Power Dept., Decatur, Indiana, reports:

"Our Hamilton diesel burns heaviest residuals with invisible exhaust...for just 4.6 mills per kwh"

"This 3810 kw Hamilton 21½ x 27½ engine is operating 18 to 20 hours per day, burning very heavy fuel (no. 6) *with an absolutely invisible exhaust.* We have experienced *no unusual piston ring or liner wear.*

"This engine provides for the turbulence at time of fuel injection and considerably more air in the cylinder. That is why we can burn the very heaviest fuels on the market today . . . for just 4.6 mills per kwh.

"We extend a cordial invitation to any Diesel engine operators to visit our Decatur plant and see our complete fuel handling system and this Diesel generating unit," Mr. Pettibone concludes.

Hamilton Division, Hamilton, Ohio

BALDWIN-LIMA-HAMILTON

16 MILLION GALLONS OF WATER PER DAY, even in extremely dry periods

Says

Mr. R. E. Cannard
Manager, City of Manitowoc
Public Utilities

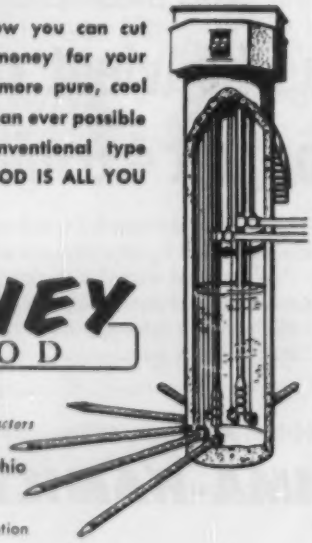
the RANNEY METHOD a "MUST" for the
CITY OF MANITOWOC, WISCONSIN

Collector "A" at the Power Plant, City of Manitowoc

Mr. Cannard says, "We have found the RANNEY to be far more efficient than the conventional type wells. Our RANNEY collectors require less personnel, fewer pumps, cuts operating costs, and eliminates filter stations altogether. The RANNEY METHOD has solved our water problems and the collectors are just as good today as they were when they were installed ten years ago."

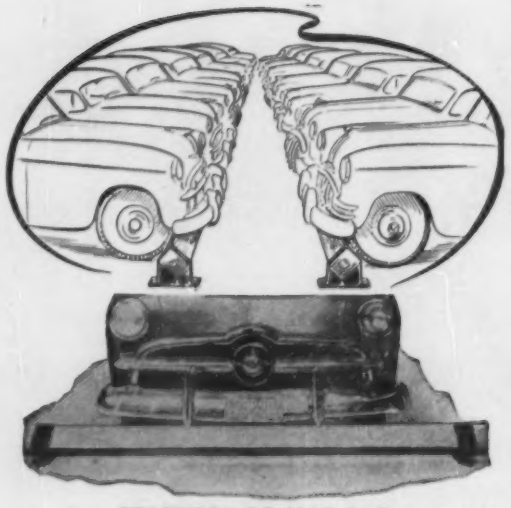
FOR YOUR CITY TOO

Write now, and learn how you can cut unnecessary costs, save money for your community, and produce more pure, cool water from just one well than ever possible before, with multiple conventional type wells. THE RANNEY METHOD IS ALL YOU NEED.



RANNEY METHOD

Water Supplies, Inc.
Water Supply Engineers and Contractors
841 Alton, Columbus 19, Ohio
Dept. AC-1
Associate:
Ranney Method Western Corporation



FEATURES OF HAR-BAR

INSTALLATION—Simplicity itself; just line up and drive the new improved ground spikes. HAR-BAR installs on any surface; Black Top, Concrete, Macadam, Gravel, Sand or Cinders.
PERMANENCE—HAR-BAR remains where it is placed because it engages the wheel and the thrust is down. There is no shear.
PORTABILITY—Easy to move; pull the spikes and relocate, with no residual damage.
LIFE—Because of the patented principle of the placement of the bar in the saddle, water drains off easily and rotting is resisted. All HAR-BAR saddles are Aluminum Alloy; no rusting, no maintenance.
USES—Industry, Business, Municipal and Private Parking Authorities, Airports; wherever orderly parking is desired, with or without attendants or meters, that is HAR-BAR.
Give dimensions and shape of your parking area. Harris-Barrier engineers will prepare *your* engineering kit without obligation!

HARRIS-BARRIER, INC.
Parking Engineers
916 E. 23rd Street
INDIANAPOLIS 18, INDIANA

HAR-BAR

JUST 2 LITTLE SWITCHES!
Biggest Improvement in PIPE DETECTORS *for years!*

INSTANTANEOUS BATTERY TESTING . . .
found ONLY on the "505" PIPE DETECTOR
Now you can have positive assurance of maximum battery function at all times while detecting, tracing and estimating the depth and location of buried pipe, cable and conduit. No more "in-the-field" battery failure or poor operation. Just flick the switch on either transmitter or receiver and get an immediate reading of battery condition. Many other important new features on the new "505".

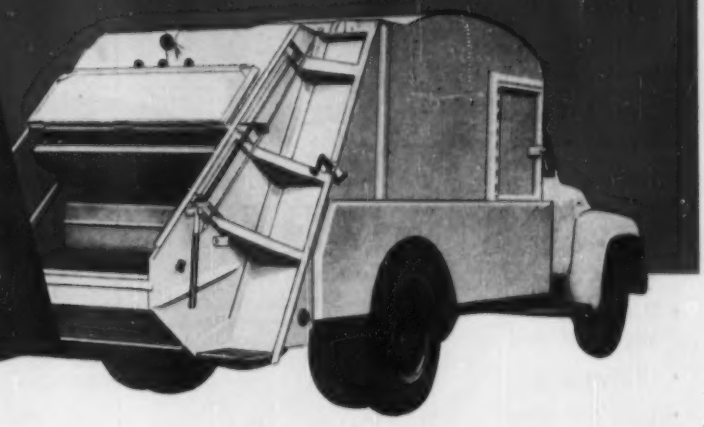
New Test-Switches can be installed on present equipment at low cost. WRITE FOR DETAILS!

THE Detectron CORPORATION

5420 Vineland Ave., Dept. 54 No. Hollywood, Calif.

THE HERMAN RAM-PAK

Automatic PRE-PACK REFUSE DISPOSER



NEW ONLY HERMAN RAM-PAK HAS ALL THESE FEATURES!

REVOLUTIONARY ENGINEERING FEAT IN REFUSE AND GARBAGE COLLECTION AND DISPOSAL... PRE-PACKS REFUSE AND GARBAGE TO INCREASE CARRYING CAPACITY UP TO 50%!!

- Holds More — Up to 50% More! Pre-packing is the Answer — 16 Cu. Yd. Loader Holds Up to 15,000 Pounds.
- Constant Operation — Cycle-less **Continuous** Loading. You Can Load Easily at 2 Miles Per Hour.
- Fast! Automatic Operation . . . Will **Pack** and Consume More Refuse Than 3 Men Can Gather!
- Knee-High Loading Height — Operators Don't Lift — Just **Tilt!**
- RAM-PAKS and "Eats Up" **Everything** — Cans — Glass — Boxes — Crates — Utensils — Cartons — Garbage . . . Even Steel Drums!
- No Doors — No Lifting — **All** Loading Done at **Low** Rear End Receiver.
- No "Gadgets" — Easiest Operating Refuse Disposer on the Market — By **Far!** No Long Instructional Training.
- Super Safe . . . No Exposed Moving Parts To Smash Arms and Legs.
- **Rugged!** Long Trouble-Free Life — Built to Last and Last and Last!
- 45° Dumping Angle — Unloads in 12 Seconds.

Send Today!

For the whole amazing story of how the RAM-PAK can speed up your refuse collection, save you money and help beautify your city . . . Mail this coupon today — No obligation.

HERMAN BODY CO.
4400 CLAYTON AVE.
ST. LOUIS 10, MO.
FRanklin 1-5300
BUILDERS OF FINEST ALL-STEEL, ALL-WELDED BODIES
Cable Address HERMANBODY

THE HERMAN BODY CO.
4400 Clayton Ave.
St. Louis Mo.

Please send complete details on the HERMAN RAM-PAK Refuse Disposer.

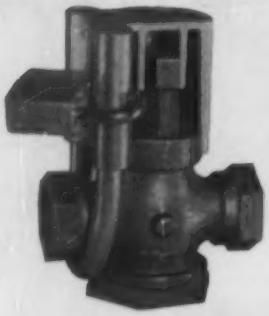
Name .....

Address .....

City and Zone ..... State .....

NEW BREMER CURB LOCK
Controls Water Cut-Offs

- Saves Call Backs
- One Trip Installation
- No Need To Remove Meter
- Fits Most Sizes
- Controls Sub-Division Problem
- Controls Vacant House Problem
- Prevents Loss of Revenue
- Foolproof Locking Device
- Used When and Where Needed
- Lifetime Unit
- Does Not Wear
- Will Not Corrode



Developed in cooperation with Jacksonville, Florida Water Department

$3.95 each

F.O.B. Jacksonville, Fla.

From 1 to 5 Bremer Curb Locks per 100 services is usually sufficient to positively control water cut-offs

BREMER BREASE, inc.
1107 MARGARET STREET
JACKSONVILLE, FLORIDA

REED DU-ALL CHAIN WRENCH

Turns Any Shape...

Works where an ordinary wrench won't!

This new REED wrench does everything a conventional pipe wrench will do, plus a great deal more. It gets into tight corners, close to baseboards or between parallel pipe lines and holds round, square or irregular shapes firmly, without "play" and without crushing. Its fast, ratchet action lets you turn either way from either side. You can tighten and "back-off" without taking the wrench from the pipe. 14", 18" and 24" lengths.

Ask your distributor or write for literature.

REED MANUFACTURING COMPANY
ERIE • PENNSYLVANIA • U. S. A.

Write for free descriptive literature

new york's Fifth Avenue is lined with UNITED waste receptacles!

. . . world's largest manufacturer of metal waste receptacles

UNITED WASTE RECEPTACLES

United Metal Cabinet Corporation, 180 Seventh Street, Brooklyn 15, N. Y.
West Coast Dist., Shoreline Metals, 2983 East Pico Blvd., Los Angeles 23, Cal.

MOST Cordial in Birmingham

200 ROOMS

Favorite host of travelers coast to coast. 200 sunlit, air-cooled and air-conditioned rooms. Large, comfortable meeting rooms. Maximum in service —Alabama Style

Rates from single $3.50 double $6.50

HOTEL MOLTON
507 N. 20th. St.

Featuring the MOLTON GRILL

"G-E DOES THE JOB... *better... faster... cheaper!"*

▲ **DRIVER, J. C. SMITH,** reports completion of emergency call involving a faulty hydrant. During 1953, G-E radio paid for itself easily by expediting repair of two major breaks on 42-inch line.

◀ **IN AN EMERGENCY,** General Electric *Electronic* Tone signalling activates base station alarm bells. Maintenance shop dispatcher Lipscomb can then re-route a service crew immediately.

● The Greenville, S. C. Water Works investment in a General Electric 2-way radio system has really paid off. Formerly, two main reservoirs were completely isolated, communications-wise. Reports had to be delivered *by hand* . . . breakdowns or equipment malfunctions were difficult to control. Today, radio coordinates all phases of water purification, transmission, distribution, pipeline construction and maintenance. And, routine servicing of the radio equipment is all that has been required even after 14 months operation.

For communications that will serve you best with outstanding performance . . . long-life . . . and low maintenance features *examine G-E first.* Call our Communications Counselor at the local office, or write: *General Electric Company, Section X1015, Electronics Park, Syracuse, N. Y.*

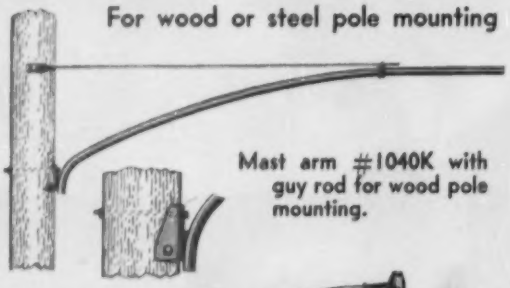
2-WAY MOBILE RADIO

FREQUENCY STABILITY & SELECTIVITY *guaranteed for life!*

GENERAL ELECTRIC

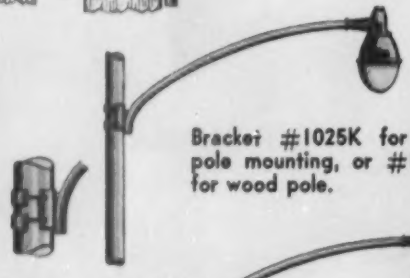
KERRIGAN Weldforged
Steel Brackets & Mast Arms

For Economy & Beauty

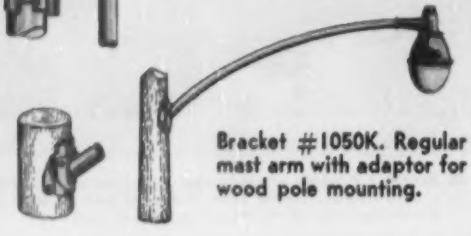


For wood or steel pole mounting

Mast arm #1040K with guy rod for wood pole mounting.



Bracket #1025K for steel pole mounting, or #1035K for wood pole.



Bracket #1050K. Regular mast arm with adaptor for wood pole mounting.

Kerrigan's complete line of brackets and mast arms are carefully engineered for easy installation and wiring. They meet all I.E.S. street lighting recommendations. So, take advantage of your wood poles now in place and brighten up your city or town NOW!

Let us help you

solve your city's lighting problems. Send for our FREE catalog containing engineering data. It shows how simple installation really is.

KERRIGAN IRON WORKS, INC.
Nashville, Tennessee
Gen'l. Sales Office — 274 Madison Ave. — N.Y.C.

attention civil defense chiefs!

MODERNIZE YOUR
WARNING SIGNAL SYSTEM
with this NEW extra-compact powerful
BENJAMIN SIREN!

TYPICAL APPLICATIONS OF THE BENJAMIN SIREN

for civil defense

for boiler alarms

for plant protection

This new siren is especially designed for modern multiple-signal installations, which overcome problems of atmospheric conditions, wind direction and industrial din. A small-yet-powerful high-torque, 10,000 r.p.m. motor and precision-machined housing makes possible extra-compact design. Famous Benjamin built-like-a-battleship construction prevents moisture from entering and assures long, trouble-free operation.

It's the 20th Century Pony Express!

FREE SIGNAL BOOK! Send for your copy of this most complete book on signaling! Benjamin Electric Mfg. Co. Dept. AC, Des Plaines, Ill.

GOO CD

WORTHINGTON-GAMON

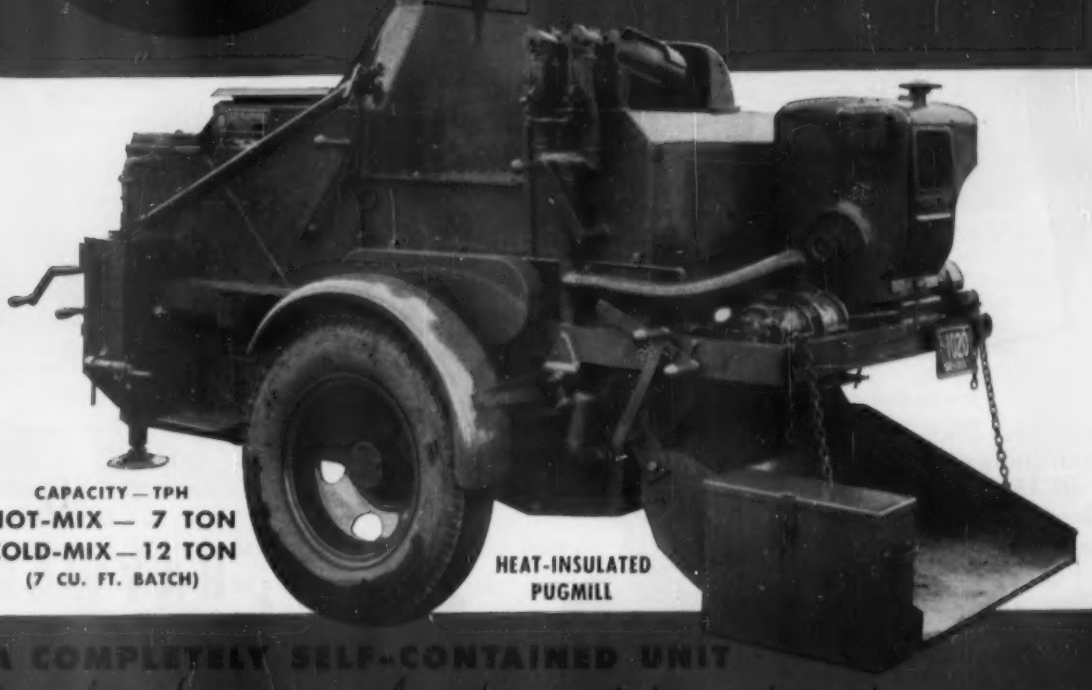
LIQUID METERS
All Sizes All Types

WORTHINGTON-GAMON METER DIVISION
Worthington Corp.
296 South Street Newark 5, New Jersey

NEW!

FOR HOT AND COLD BITUMINOUS MIXES . . .

LITTLEFORD MODEL 700 "TRAIL-O-PATCHER" BITUMINOUS MIXER



CAPACITY — TPH
HOT-MIX — 7 TON
COLD-MIX — 12 TON
(7 CU. FT. BATCH)

HEAT-INSULATED PUGMILL

A COMPLETELY SELF-CONTAINED UNIT
for *higher production* at lowest cost . . . . .

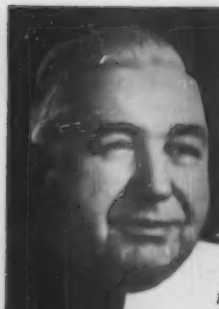
Highway Departments and Contractors can now make aggregate patch mixes right on the road with the Littleford Model 700 Trail-O-Patcher. This engineered unit is another Littleford first—it's a self-contained unit with combination pugmill and dryer, bitumen metering system and 200 gal. bitumen tank—it requires no special equipment to do the mixing job. Model 700 Trail-O-Patcher will produce 7 tons of hot-mix or 12 tons of cold-mix per hour. Heat can be applied while the aggregate and bitumen are being mixed or the heat can be deflected from the mix—this is controlled heating.

For mixing anywhere, in any weather, the Trail-O-Patcher gives accurate mixes at the lowest cost.

Model 700 Trail-O-Patcher is designed to perform maintenance work on roads, streets, highways, parking areas, runways and driveways. It's highly portable and a completely engineered unit. For further details see your nearest Littleford Dealer or write.

LB LITTLEFORD
BLACK TOP ROAD MAINTENANCE EQUIPMENT SINCE - 1905

LITTLEFORD BROS., INC., 500 E. PEARL ST. CINCINNATI 2, OHIO



DURO-TEST
LAMPS ARE UNEQUALED FOR LONG LIFE AND ECONOMY

Writes W. Z. SMITH
City Electrician
Huntington, W. Va.

Duro-Test Corp.
North Bergen
New Jersey

Gentlemen:
I am writing this letter in the interest of various Municipal and State Governments, who desire to improve Traffic Safety on their streets and highways.

We have on our Streets 96 Traffic Signals that operate 24 hours each day continually. We have a complete filing system on each lamp in each Traffic Signal. We have checked various makes of Traffic Lamps to determine the life and service. However, we have not found any lamps that equal in long life or are as economical as the Duro-Test Lamp

I have been responsible for operation and maintenance of our Traffic Signal for 36 years.

Very truly yours

City of Huntington
W. Z. Smith, City Electrician

And now Duro-Test brings another great contribution to highway safety . . . the new V-BEAM lamp. For complete information about this revolutionary new lamp, write today for Bulletin T-1.

DURO-TEST CORPORATION
NORTH BERGEN • NEW JERSEY

OK CHAMPION POWER SEWER CLEANERS

Mounted on perfectly balanced *4-Wheel Chassis*—for greater safety. No lifting over manhole, or pulling away during operation. Safe tandem towing.

All Controls at Working End—keeps operator out of passing traffic, allows full vision of work.

Built-in *Gear Reduction* Ratio—allows better use of power for bucket travel and pulling power.

Fully Automatic *Safety Clutch*—instant acting, avoids damage to tires or machines.

Slower Speed Engines—air or water cooled—for longer life, greater operating economy.

NEW Pole-Suspended Guide Wheel—a special OK Champion feature—lowers easily—keeps men out of manhole. Fits any model OK Champion Power Sewer Cleaner.

Write for latest OK Champion Circular

CHAMPION CORPORATION • 4716 Sheffield Ave. • Hammond, Ind.

Catch Basins Come Clean
. . . with a
HAYWARD ORANGE PEEL

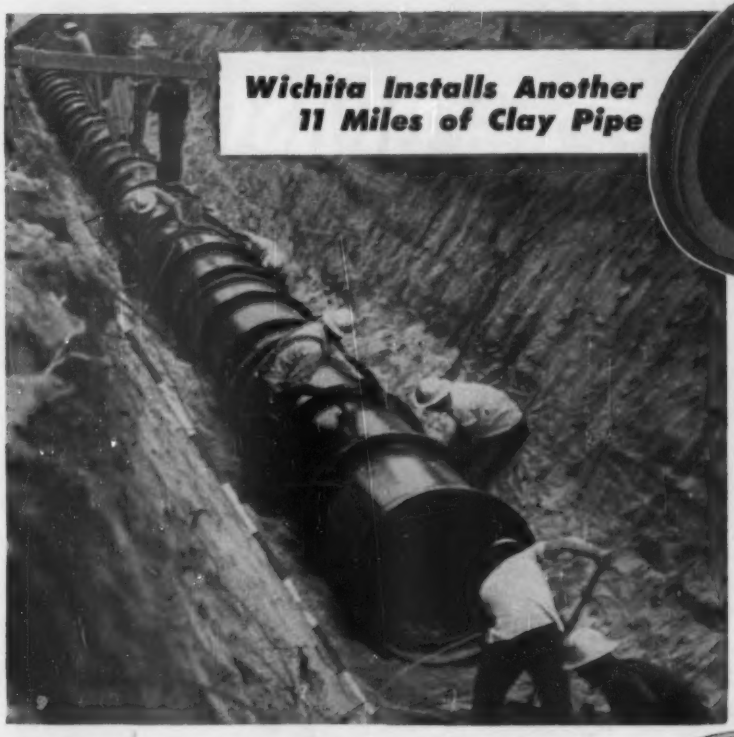
Whatever is in a catch basin can be removed by a Hayward orange peel catch basin bucket.

Catch basin cleaning is a special job and Hayward developed a bucket to make the job easy.

Write for Bulletin 805

THE HAYWARD COMPANY
50 Church Street, New York 7, N. Y.

Guaranteed Clay Pipe *IS FIRST CHOICE* FOR BOND-FINANCED SEWERS



More than 59,000 feet of Clay Pipe, 18 to 36 inches, are being installed in Wichita, Kan., under the direction of Eugene N. Smith, City Manager; George J. Fisher, Director of Service; and B. E. Smith, City Engineer. Contractor is Utility Contractors, Inc., under Paul W. Brock, President. Project Engineer: Ray E. Lawrence. Resident Engineer: Don Proudfit. Consulting Engineers: Black and Veatch.

When taxpayers approve a sewerage bond issue, they're giving a vote of confidence to the good judgment of the men who will specify the pipe. Bond-financed sewers *must* give long, trouble-free service. You can be absolutely sure of their dependability when you use guaranteed Vitrified Clay Pipe. Clay Pipe installed today will be good as new long after the bond issue is retired. Alkaline soils or acid sewer gases can't corrode it. Corrosive industrial waste doesn't affect it. There's *no safe substitute* for chemically inert Clay Pipe. It's guaranteed for 50 years!

A complete line of fittings solves every installation problem when you specify Clay Pipe. This T-Branch, for example, enables you to joint feeder lines into a trunk without patching or using substitute materials.

Vitrified
CLAY
PIPE
NEVER WEARS OUT!

C-454-2

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1520 18th St. N. W., Washington 6, D. C.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
206 Connally Bldg., Atlanta 3, Ga.

BITUMULS® assures high-quality in-place mixes

WHEN you're working with native or in-place material and you get a thoroughly-coated mix like this rolling off the blade, it's no accident. There's a reason for it, and that reason is *Research*.

Road-builders are always confronted with the problem of making their materials, methods and equipment fit each job. Many years ago we faced the fact that, as far as asphaltic binders were concerned, the Road-builder's problems were our problems. It was then that we turned to *Research* for the answers.

Today, we maintain the most extensive research program in the industry. Over the years have come such developments as Bitumuls for use with "hard-to-coat" native aggregates; Bitumuls for use with damp or wet aggregates; Bitumuls for use in damp or inclement weather. Each new development has been designed to assure fast and thorough coating of aggregates to produce a high-quality mix with uniform drying characteristics.

Bitumuls—emulsified asphalt for cold-application—is available in Mixing Grades as well as in grades designed for Surface Treatment and Penetration work. Full technical information on all grades is available from Bitumuls Engineers who work out of offices from coast to coast. In addition, illustrated booklets containing data on Bitumuls application are available without obligation.

AMERICAN Bitumuls & Asphalt COMPANY

200 BUSH ST., SAN FRANCISCO 4, CALIFORNIA

E. Providence 14, R. I. Perth Amboy, N. J. Baltimore 3, Md. Mobile, Ala. Cincinnati 38, Ohio
Columbus 15, Ohio Tucson, Ariz. Seattle, Wash. Baton Rouge 2, La. St. Louis 17, Mo.
Inglewood, Calif. Oakland 1, Calif. Portland 7, Ore. Washington 5, D. C. San Juan 23, P. R.

The NEW Model HFC PAYLOADER®

with Torque Converter Drive for increased output

CAPACITY of Bucket
1 cu. yd. PAYLOAD
(¾ cu. yd. Struck-load)

THE Model HFC "PAYLOADER" is an improved design of a popular model that boasts thousands of satisfied users. This *new* unit, with torque-converter drive and other refinements, has been thoroughly field-tested and has proven itself superior in every respect — in work output, versatility and ease of operation. Its unique combination of Hough four-speed, full-reversing transmission and torque-converter drive provides "just-right" speeds forward and reverse for every job — plus smooth, shockless power flow at all times.

Your "PAYLOADER" Distributor is eager to show you what this Model HFC can do and to acquaint you with the many other sizes and types of *proven* "PAYLOADER" tractor-shovels.

TORQUE CONVERTER multiplies output

Faster Operation
Infinite Speeds
Full Engine Power
Precise Control
Easier Operation

PAYLOADER®
THE FRANK G. HOUGH CO. · LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
710 Sunnyside Ave., Libertyville, Ill.
Send literature on the new Model HFC "PAYLOADER"

Name _____
Title _____
Company _____
Street _____
City _____ State _____

THE MEMBERSHIP OF A C.I.P. Century Club

96%

OF ALL 6-INCH AND LARGER CAST IRON WATER MAINS EVER LAID IN 25 REPRESENTATIVE CITIES ARE STILL IN SERVICE.

Based on the findings of a survey conducted by leading water works engineers

CAST IRON PIPE

DISTINGUISHED CLUB...
now has 67 Members!

The Cast Iron Pipe Century Club is probably the most unusual club in the world. Membership is limited to municipal, or privately-owned, water and gas supply systems having cast iron mains in service for a century or more. Although the Club is formally constituted, there are no dues, no regular meetings, and no obligations other than to inform the Recording Secretary if and when the qualifying water or gas main is taken out of service, or, sold for re-use.

In spite of the unique requirements for membership, the Club roster grows, year by year, from 18 in 1947 to 67 in 1954. Members comprise 35 *water* and 32 *gas* utilities, in cities large and small, from the Pacific to the Atlantic, from Canada to the Gulf.

If your records show a cast iron main in service, laid a century or more ago, the Club invites you to send for a handsome framed Certificate of Honorary Membership. Address Thomas F. Wolfe, Recording Secretary, Cast Iron Pipe Century Club, Peoples Gas Bldg., Chicago 3, Illinois.

CLUB ROSTER

DEPARTMENT OF WATER AND WATER SUPPLY
City of Albany, New York
NIAGARA MOHAWK POWER CORP. (GAS)
Albany, New York
ALEXANDRIA WATER COMPANY
Alexandria, Virginia
BUREAU OF WATER, DEPT. OF PUBLIC WORKS
Baltimore, Maryland
CONSOLIDATED GAS ELECTRIC LIGHT AND POWER CO.
Baltimore, Maryland
PUBLIC WORKS DEPT., WATER DIVISION
Boston, Massachusetts
BOSTON CONSOLIDATED GAS CO.
Boston, Massachusetts
PUBLIC SERVICE ELECTRIC & GAS CO.
Bound Brook, New Jersey
BRIDGEPORT GAS LIGHT COMPANY
Bridgeport, Connecticut
DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATER
Buffalo, New York
SOUTH CAROLINA ELECTRIC & GAS CO.
Charleston, South Carolina
PEOPLES GAS LIGHT & COKE COMPANY
Chicago, Illinois
WATER WORKS DEPARTMENT
Chicago, Illinois
*CINCINNATI GAS & ELECTRIC CO.
Cincinnati, Ohio
*COLUMBIA WATER COMPANY
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BOARD OF WATER COMMISSIONERS
Detroit, Michigan
MICHIGAN CONSOLIDATED GAS CO.
Detroit, Michigan
FALL RIVER GAS WORKS COMPANY
Fall River, Massachusetts
CITY OF FREDERICK WATER DEPT.
Frederick, Maryland
*FREDERICK GAS COMPANY, INC.
Frederick, Maryland
GAS DEPARTMENT
City of Fredericksburg, Virginia
PUBLIC SERVICE COMMISSION
City of Halifax, N. S., Public Water Supply
THE HARTFORD GAS COMPANY
Hartford, Connecticut
*WATER BUREAU OF THE METROPOLITAN DISTRICT
Hartford, Connecticut
MUNICIPAL WATER WORKS
Huntsville, Alabama
*CITIZENS GAS & COKE UTILITY
Indianapolis, Indiana
BUREAU OF WATER
Lancaster, Pennsylvania
LOUISVILLE GAS & ELECTRIC CO.
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Lynchburg, Virginia
NATURAL GAS SERVICE, INC.
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QUEBEC HYDRO-ELECTRIC COMMISSION
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Montreal, Quebec
WATERWORKS DEPARTMENT
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New Brunswick, New Jersey
NEW HAVEN GAS COMPANY
New Haven, Connecticut
NEW ORLEANS PUBLIC SERVICE, INC. (gas)
New Orleans, Louisiana
PUBLIC SERVICE ELECTRIC & GAS COMPANY
Newark, New Jersey
DEPT. OF WATER, GAS & ELECTRICITY
New York, New York
PHILADELPHIA ELECTRIC CO., GAS DEPT.
Norristown, Pennsylvania
CITY OF PAINESVILLE, GAS DIST. DEPT.
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Philadelphia, Pennsylvania
PHILADELPHIA GAS WORKS CO.
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Reading, Pennsylvania
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Richmond, Virginia
DEPT. OF PUBLIC UTILITIES (water)
Richmond, Virginia
ROCHESTER GAS & ELECTRIC CORP.
Rochester, New York
*DIVISION OF WATER & SEWERS
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WATER & SEWERAGE DEPARTMENT
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WATER DIVISION, Dept. of Engineering
Syracuse, New York
THE CONSUMER'S GAS CO. OF TORONTO
Toronto, Ontario
DEPT. OF PUBLIC WORKS
Troy, New York
CITY OF UTICA, BOARD OF WATER SUPPLY
Utica, New York
CITY OF WHEELING WATER DEPT.
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Brings microfilming within the reach of all...

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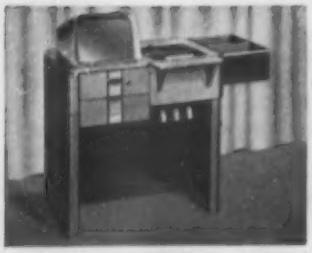

COMPACT—Space-saving Micro-Twin is safe and comfortable to operate on a table or with desk-high matching stand,* as shown.

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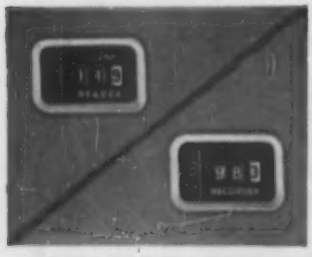
EASY VIEWING—Wide-vision reader shows sharp images, actual document size, and produces distinct, full-size facsimile prints.



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For less money than ever seemed possible, the Micro-Twin offers you complete microfilming recorder and reader, both in one compact unit.

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Make a date to meet the Micro-Twin at your nearest Burroughs branch. Burroughs Corporation, Detroit 32, Michigan.

**Available as an optional purchase.*

Wherever there's business there's

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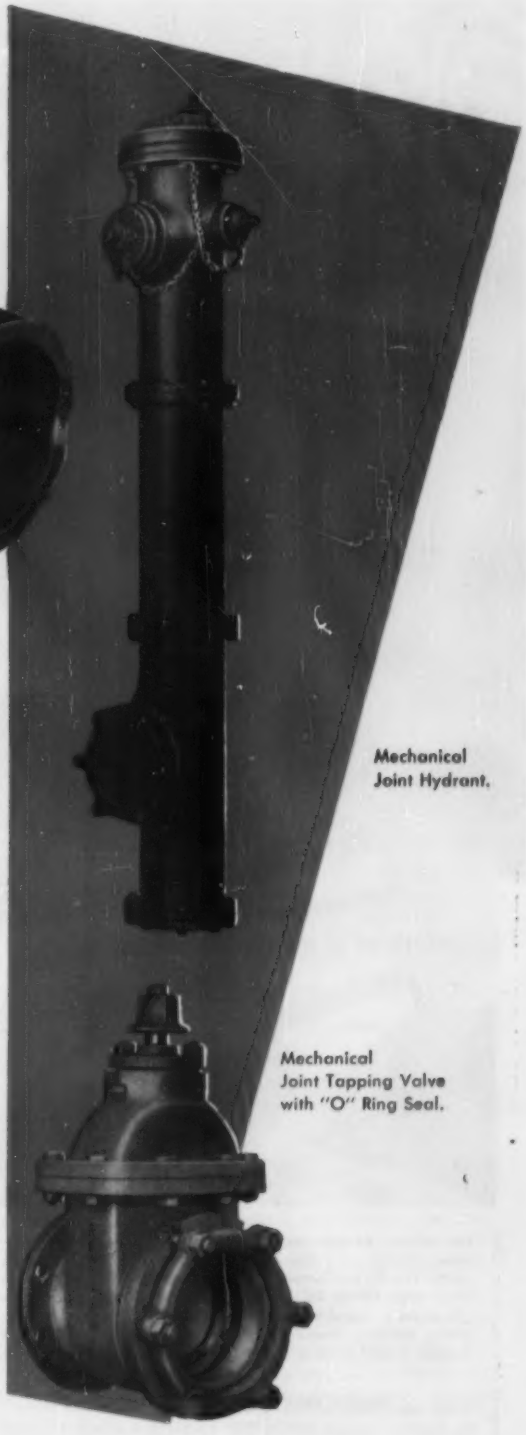

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VALVES AND HYDRANTS *with Mechanical Joint*

Mechanical Joint Hydrant.

Mechanical Joint Tapping Valve with "O" Ring Seal.

The surest way to reduce installation costs and insure long service with low maintenance on cast iron pipe lines is to use Rensselaer Valves and Hydrants with Mechanical Joints.

The installation cost is reduced because an unskilled laborer can make the connection in a few minutes with only one wrench.

Low maintenance is assured by the dependability of this type of connection which has been tested and proven in thousands of installations.

Rensselaer Gate Valves are built rugged and simple, designed to give positive seating action and long life. They are easy to operate, are made of high quality materials and conform to A.W.W.A. specifications.

Rensselaer Fire Hydrants are designed on the knuckle joint principle and open with the pressure. They are quick opening with free-flow, long radius curves. Will not freeze or flood and no digging is required for repairs or stand-pipe breakage.

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GATE VALVES • FIRE HYDRANTS • SQUARE BOTTOM VALVES • CHECK VALVES • AIR RELEASE VALVES

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113

221 TRENCHLINER DIGS 8½′ DEEP 16 TO 36″ WIDE . . .

For wider, deeper trenches, check Parsons 250 Trenchliner (above) . . . digs 16 to 42 in. wide, 12½ ft. deep, up to 9¾ ft. per minute. Bigger ladder-type 310 Trenchliner digs 18 to 54 in. wide at 17-ft. depth with single boom . . . and 6 ft. wide, 12 ft. deep with dual booms. Other Parsons Trenchliners include 2 wheel-types, full crawler mounted, and mobile, rubber-tired Trenchmobile®.

Send to: **PARSONS COMPANY,** Newton, Iowa

for bulletins on: ☐ 221 ☐ 250 ☐ 310 Trenchliners

NAME _____

TITLE _____

STREET _____

CITY, STATE _____

AC

For city work, here's the handiest trencher you've ever seen . . . dodges poles, hugs curbs, undercuts sidewalks, makes vertical set-ins, loads trucks. What's more, you get 30 digging feeds up to 13¾ ft. per minute, 12 trench widths from 16 to 36 in., and depths to 8½ ft. with Parsons 221 Trenchliner.

Easy-in, easy-out "Tap-In" teeth assure maximum trench production at every depth, width, in all soils. Sloping ladder boom undercuts sidewalks, sewers and old mains . . . makes vertical set-ins flush with buildings, foundation walls. Boom is shiftable, digs within 10 in. of curbs, poles and buildings in narrow alleys and streets. Reversible spoil conveyor dodges side obstructions without swerving from grade line . . . shifts through machine by power in less than 1 minute, dumps to either side. Arc-type conveyor also reaches up 6 ft.-4 in. (8 ft.-2 in. with extension section) for loading trucks.

Get all the details on this versatile 221 Trenchliner from your Parsons distributor, or send for bulletin.

PARSONS *Trenchliners*®

(Koehring Subsidiary)

15-TON LIFT SERVICE

. . . with KOEHRING

32½ M.P.H. 205 TRUCK CRANE

COMBINING heavy-lift capacity with high-speed, rubber-tired mobility, Koehring 15-ton Truck Crane is the most efficient answer for widely-scattered lifting and material-handling jobs around town. Where work requires frequent moves over pavement and through city traffic, this mobile Truck Crane rolls along at speeds to 32½ m.p.h. There's no waiting for trailer, no loading delays. Hinged boom folds back for ample travel clearance, saving more time on every job-to-job move.

Maximum 15-ton lift capacity (boom lengths from 25 to 55 feet) gives this heavy-duty Truck Crane plenty of operating stability to handle over-size clamshell and dragline buckets on a wide work range . . . quickly converts to ½-yd. shovel or hoe . . . also available on crawler mounting.

Other Koehring Heavy-Duty sizes up to 79½-ton lift . . . 2½-yd. dipper capacities. See your Koehring distributor for complete facts, or write to us for catalogs.

8'-9" OVER-HEAD LOADING

. . . with KWIK-MIX

BITUMINOUS TOWER LOADER

NOW you can load bituminous mix into trucks, overhead hoppers, or stockpile with Kwik-Mix Tower Loader attachment. Available for both Kwik-Mix 10 and 14 cu. ft. Bituminous Mixers, it provides 7'-9" to 8'-9" discharge height . . . saves time and cost of overhead mixer installations on many jobs.

Big bucket holds full mixer batch, is raised by power, dumps automatically at top of tower. Bucket travel and discharge are completed while next batch is being mixed . . . no delay to mixer production. It is single lever controlled by mixer operator . . . mixer engine supplies the power. Tower Loader is quickly collapsed for ample travel clearance . . . is also available on Kwik-Mix 16-S and 11-S Dandie® Concrete Mixers for 9'-2" overhead loading.

Ask your Kwik-Mix distributor for the facts, or write us. Also check Kwik-Mix line of bituminous, 3½-S to 16-S concrete, tilting and non-tilting plaster-mortar mixers, and Moto-Bug® (power wheelbarrow).

CP207REV AC

KOEHRING *Cranes*

KOEHRING COMPANY, MILWAUKEE 16, WIS.
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KWIK-MIX *Mixers*

KWIK-MIX COMPANY, MILWAUKEE, WIS.
(Koehring Subsidiary)

Breaking Chicago's Bottleneck with a BLAW-KNOX BITUMINOUS PAVER ON WHEELS!

● Chicago and the Cook County Highway Department had a date! Dec. 1st had to see the completion of the last section of the North Side Outer Drive. Standard Paving Co. of Chicago had the contract. The job was two lanes, 48-ft. wide and over half a mile long. After seeing the Blaw-Knox Paver on a few hours' work they bought the machine and finished the job in 13 days in spite of several days of bad weather.

The pavement was 3 courses of I-11 — two base courses 1½" thick and a finish course 1½" thick. All courses were 12 ft. wide. The machine operated at 24 ft. a minute and handled 15 ton trucks. Output was materially reduced because of the long haul (12 miles) from the plant, but in spite of weather and haul the entire job including lighting will be completed long before the penalty date.

You can make money by paving on wheels!

BLAW-KNOX COMPANY
FOOTE CONSTRUCTION EQUIPMENT DIVISION
1904 STATE STREET
NUNDA, NEW YORK

- ✓ Long wheel base and wheel steering assure greater accuracy and smoother course.
- ✓ Eliminates the 500 to 600 parts characteristic of crawlers.
- ✓ Tires absorb vibration, reduce chatter in screed and reduce wear and tear on machine.
- ✓ Handles boxcar trucks on grades with ease.
- ✓ Dual controls — operate machine from either side.
- ✓ Compacts to uniform density and automatically measures and levels.
- ✓ Leveling principle equalizes ordinary subgrade irregularities.
- ✓ Simple, easy crown adjustment.
- ✓ Conversion for increased width is easy and fast.
- ✓ Works close to curb.
- ✓ A sturdy frame you won't have to rebuild.
- ✓ The *only* floating screed paver with positive traction at *all* times.

On wheels it will pave for less

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INSERTING VALVES AND EQUIPMENT

ADD NEEDED CONTROL—
AT VITAL POINTS...

H-800
Sizes 4", 6", 8"
Shipment from stock

without a
SHUTDOWN!

Avoid fire hazard and customer inconvenience! There is no longer any need to shut down any part of your water distribution system to install needed control valves at strategic locations.

Mueller Inserting Valves are installed in any existing line under pressure without interruption of flow or loss of water and are operated like an ordinary gate valve. Mechanism is identical to that of standard Mueller AWWA Gate Valves. Parts are interchangeable.

Write today for Catalog H-20 or consult your Mueller Representative.

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Dependable Since 1857
MAIN OFFICE & FACTORY DECATUR, ILLINOIS

MOTORIZED RESIDENTIAL PATROL

more thorough than a man on foot...

THERE'S nothing to match the patrolling efficiency of the mounted officer on a Harley-Davidson Servi-Car. He covers his beat more completely and more often than the walking officer . . . yet he's motorized to move swiftly to any trouble spot. Motorists obey the law because they know he's powered to catch offenders. Vandals and housebreakers avoid the area he patrols. And children love him just as they loved the old-fashioned officer on foot.

The Servi-Car is compactly designed and sturdily built from the ground up to give you dependable, trouble-free service . . . wherever and whenever you need it. Ask your dealer for complete information or write us today.

HARLEY-DAVIDSON MOTOR CO., Milwaukee 1, Wisconsin.

HARLEY-DAVIDSON
POLICE
SERVI-CARS

a parking meter does its job with a signal
EXPIRED
all red (OVER PARKING)
no red (ILLEGAL)
NEVER PART RED DURING LEGAL PARKING. LARGE SIGNAL AREA SEEN FROM BOTH SIDES.
FOR ECONOMICAL ENFORCEMENT
THE SIGNAL MUST BE SEEN
50 yards away
FROM MOVING PATROL VEHICLE

MODEL H PARK-O-METERS

MEET EVERY REQUIREMENT IN ANY CITY

PARK-O-METER is adjustable to take any one or more of commonly used coins: pennies, nickels, dimes or quarters, through the same coin-slot to allow 6 minutes to 24 hours parking time in any coin and time combination.

This complete convertibility assures adaptability to changing traffic requirements and to either on-street or off-street operation.

The simplicity of PARK-O-METER's one-hand, automatic operation appeals to the public and builds quick acceptance and approval.

Ask for a demonstration . . . there is no obligation on your part. You owe it to yourself to know all about PARK-O-METER.

Magee-Hale PARK-O-METER COMPANY
COMMERCE EXCHANGE BUILDING • OKLAHOMA CITY 2, OKLAHOMA

LARGE METER *Capacity*
+ SMALL METER *Sensitivity*
= MAXIMUM *Revenue*

No proud father would argue that twins are as easy to take care of as one. That's one reason Neptune Trident Style 3 meters are recommended in place of compound meters for 1½" and 2" service lines. The Style 3 disc meter is accurate down to exceptionally low flows, and handles high flows with ease.

The simpler Style 3 meter maintains accuracy longer, and repairs (when necessary) are easier. Modern Style 3 parts fit older meters. There's no obsolescence . . . you modernize as you go. And its lower initial cost gives you a nice saving. So why use two meters when one will do the job?

Style 3 meters were the first to feature a special pressure adjustment. In high-pressure lines, the outlet of the meter is throttled to prevent overspeeding, and in low pressure installations, the outlet is opened wide to minimize loss of head.

Proof of the accuracy and efficiency of the Trident Style 3 will be found in your own testing equipment . . . in lower maintenance costs . . . and in increased revenue.

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Branch Offices in Principal American and Canadian Cities

neptune

241

... where it could be operated conveni- ... the sand dike. A trench was cut into

JANUARY 1955 The American City

By L. W. BREMSER
Black & Veatch
Consulting Engineers
Kansas City, Mo.

Restricted site and difficult river crossings find a solution in an unusual plant arrangement

An International TD-14A crawler tractor, equipped with a Bucyrus-Erie bulldozer blade, covers the trunk sewer connecting this portion with the rest of the system.

TULSA Solves a Sewerage Problem

The isolated location and limited area for plant structures show up clearly in this progress picture. Primary clarifiers (left foreground) and digesters (right) are beginning to shape up. Note, also, the trenching work across the Arkansas River.

A NEW sewage-treatment plant and 16 miles of trunk sewers are making life a lot happier for Tulsa, Okla. The plant not only provides primary treatment and has a nominal capacity of 21 mgd (million gallons daily), but is also eliminating a long-endured odor nuisance in some of the finest residential areas of the city.

The location of Tulsa, and the river winding through the city, made a rather involved engineering study necessary. This led to the conclusion that a site on the west bank of the river would be most desirable. This roughly triangular area is bounded by a railroad and Turkey Mountain on the west, and the river on the east. The site is well isolated but required an exceptionally thorough study so that it could be used most effectively. Analyses showed ade-

quate space for construction of a complete treatment, trickling-filter plant to handle the ultimately anticipated sewage load from the tributary area. However, the site offered no space for sludge-drying beds. In view of the climate, air drying of sludge promised to be most dependable and economical.

Eventually, the study uncovered a site for sludge lagoons on the west bank of the river, 2 miles south of the plant. Consequently, the design selected provided digestion of the sludge at the plant and pumping to this area.

Collection of the sewage and conveyance to the treatment plant also presented a problem. The eastern side of the river contributes the greatest sewage load, for it has the major concentration of residential population, the main business district, and a large industrial area. The west side is occupied largely by refineries and other industries which do not contribute appreciably to the sanitary-sewage flow.

Interceptor Sewer

The studies resulted in the construction of an interceptor sewer of Lock-Joint concrete pipe along the east bank of the river. The pipe diameters range from 24 inches at the upper end to 60 inches at the crossing point. Two lift stations, provided en route, lessen the required depth of sewer. From the crossing location, a 42-inch main extends south and then turns east to serve the residential area. The west Tulsa industrial area will be served by an interceptor and pumping station, which will deliver the sewage across the river to the main interceptor and two existing sewers. These will also serve a new interceptor sewer, collecting sewage from the remainder of west Tulsa by gravity flow.

The question of whether to pump across the river at this critical point or to construct a gravity line to the plant site posed another problem. Borings indicated that it was feasible to convey the sewage across the river by a gravity sewer constructed on a layer of shale below the river bottom, and to locate the pumping station on the site of the treatment plant where it could be operated conveniently by plant personnel. Location of the pumps on the west side of the river also eliminated the need for a separate pumping station to handle the sewage from the existing sewers in west Tulsa.

This river crossing was perhaps the most interesting construction operation of the entire project. A dike of river sand was built out into the river from the west bank. Excavation for the sewer was then made through the dike to the shale, using well-pointing equipment to dewater the sand dike. A trench was cut into the shale; two 30-inch reinforced-concrete sewer pipes were then laid and encased in concrete. When construction was complete on the west side of the main channel, the flow was diverted to the west end and the same construction procedure was followed from the east bank.

The main pumping station at the plant is equipped with a Chicago Pump Company Barminutor mechanical-sewage screen, a Jeffrey mechanically-cleaned screen, and with four Fairbanks-Morse pumping units ca-

Plenty of well-point work was required to lay this portion of the interceptor in dry cut. The pipe is extra-strength clay tile placed in a concrete cradle. A Moretrench well-point system did the required dewatering of excavated trench.

pable of lifting 39 mgd of sewage 38 feet into the treatment plant. By a change of impellers, they are suitable for conversion to a capacity of 58 mgd.

Prior to grit removal and preaeration, the sewage is measured by a 6-foot Parshall flume. Twenty minutes of preaeration, supplied by Chicago Pump swing diffusers and Sutorbuilt blowers, is provided in a combined grit-removal and aeration tank.

From the preaeration chamber the sewage passes into two circular, 120-foot Process Engineers primary clarifiers, designed for 2½ hours of detention and a surface overflow rate of 935 gallons per square foot per day at a flow rate of 21 mgd.

After primary settling, the sewage is chlorinated and retained for 20 minutes in a 60-foot circular basin which is equipped with a Process Engineers sludge collector that returns sludge by gravity to the suction well of the main pumping station.

Digestion Tanks

Sludge from the primary settling basins is discharged by means of swivel-jointed pipes into a sludge observation well, from which it is transferred by Gaso pumps into the sludge-digestion tanks.

Two sludge digestion tanks are provided with a common control house and are arranged to operate either in series or in parallel. The tanks have a total sludge-digestion capacity of 460,000 cubic feet, equivalent to 2.5 cubic feet per capita for the estimated contributory population of 184,000. Each tank is equipped with a 100-foot-diameter floating cover and an external sludge heater of 1,000,000 BTU per hour capacity, both Pacific Flush Tank products.

Sludge is circulated through the heating units by two Fairbanks-Morse pumps rated at 300 gpm each. Sludge gas, for the present, will be used only for digester heating; the excess will be burned. Two 200-gpm sludge pumps are provided to pump the digested sludge through an 8-inch steel line to the lagoon area.

In addition to the structures previously mentioned, a shop-and-laboratory building is provided which houses chlorine supplies and a Wallace & Tiernan chlorine feeder, shop and garage area, office and laboratory space, and a conference room for instruction sessions and meetings. The office, laboratory, and conference areas are completely air conditioned and are supplied with E. H. Sheldon laboratory furniture.

Still to be placed under contract are the Mooser Creek sewer and the west Tulsa interceptor and pumping station.

The water and sewerage department of Tulsa is under the direction of an appointed utility board with the elected Commissioner of Water and Sewerage as chairman. Glenver McConnell served as commissioner at the start of the project; John Thomas is now in office. W. F. McMurry is superintendent of water works and sewage. Consulting engineers for the project were Black & Veatch, of Kansas City, Mo., and Fell & Wheeler, of Tulsa, Okla.

Inexpensive Fluoride Feeder

A NEW TYPE of feeder that uses hydrofluosilicic acid will be used to apply fluorides to the water in Cumberland, Md., as a dental health measure. It will be used by the Evitts Creek Water Company.

Hydrofluosilicic acid is a liquid that can be applied directly by a closed system. It eliminates the dust hazard of other fluoride products and, in the opinion of the water company, permits more accurate feed controls. Operators need only rubber gloves and plastic face shields to handle the acid. With the tank installed in a cool, well-ventilated spot, danger is almost nonexistent.

The plant installation will incorporate bulk storage of the acid in two air-pressure loaded tanks of 1,570 gallons each. Each tank will be lined with Neoprene and will be served by plastic tubing extending to the feed system.

A Burks pump, rated at 1,200 gpm and powered by a 1-hp Fairbanks-Morse motor, will provide the water used with the acid in the feeder. The feeder is the ejector-vacuum type—a Feedrator designed by Fischer & Porter for acid-dispensing purposes.

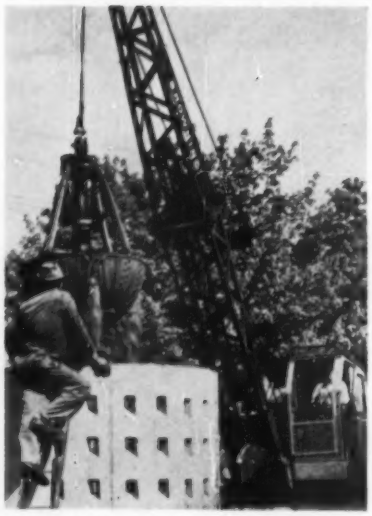
A 2-gpm acid pump made by General Scientific Equipment Company of Philadelphia will transfer the acid to the feed container. The flow of liquid can be stopped instantly by pressing the relief valve upward, permitting air to escape. The range of the Feedrator machine unit is calibrated for each unit from 0.3 to 3.0 gallons per hour, based on a liquid with a specific gravity of one.

Two units will be supplied, each to be operated at half rate. The fluoride solution will be applied ahead of the filters, immediately after the settling basin. When the present plant is renovated the designers plan to supply two large mixing basins ahead of the filters to insure better dispersion of the acid in the water.

This fluoride feeding system was designed by George M. Hitchcock, superintendent of the Evitts Creek Water Company. It can be built for less than $1,000, and has been approved by the state boards of health of Pennsylvania, Maryland, and West Virginia. A plan of the feeding unit may be obtained from Mr. Hitchcock.

By W. FRED WELSCH *
Professional Engineer
West Hempstead, N. Y.

Diffusion Wells



A grab bucket on a Browning crane removes sand and gravel so that well sections can sink into the ground by gravity.

Larger-diameter wells that return storm water to the ground help protect Long Island, N. Y., well supplies while providing drainage to flat areas

DIFFUSION wells are the most recently developed tools that Long Island, N. Y., is using to return rain water to the ground and maintain the ground-water table at an elevation that will guarantee the safety of well supplies. These probably should be termed "reverse wells," since they return water to the ground, rather than provide a way to remove it.

These wells are very serviceable where geological formations consist of unconsolidated sand and gravel that receive storm water readily. They provide a dual purpose, supplying a means of providing drainage in areas that are difficult to drain, and conserving Long Island's only source of public water supply. A number of them already are in operation in Nassau and Suffolk counties and in New York City's Borough of Queens. The wells do a good job of disposing of roof and yard drainage. They also provide a ready means of draining parking fields and certain street intersections where the cost of trunk storm sewers would be prohibitive.

The average annual rainfall on Long Island is 42 inches. Less than half seeps into the ground and the balance is lost through evaporation, transpiration, and stream runoff into tidal waters. Geologically, Long Island is underlain by bedrock. The material between the rock floor and the surface of the ground consists of layers of sand and gravel of varying thickness, separated by lenses of clay, also of differing widths.

The topography of the island is reasonably uniform. The north shore, facing Long Island Sound, is somewhat abrupt, rising to form hills several hundred feet high. From the south shore, the land rises gently to the backbone of the island, marked frequently by groups of hills. The southerly side of the island consists of plains sloping gently toward the Atlantic Ocean. The elevation is so flat that it makes good storm drainage very difficult, if one has to rely upon conventional methods.

The diffusion wells consist of prefabricated, reinforced-concrete pipe sections with flared openings in the barrels. One type of pipe section is 7½ feet in diameter and 4 feet in length; the other is 10 feet in diameter and 6 feet in length. The larger sections have 7-inch walls for depths reaching to 60 feet, and 10-inch walls for the greater depths. The flared openings permit the water to seep into the sand and gravel.

Sections are fastened together in six places through the slotted openings with vertical steel straps, and double-steel straps for depths over 60 feet. The bottom section, which is open for seepage, has a steel cutting edge to help sink the well by means of the open, caisson method of excavation.

The reinforced-concrete cover slab has a manhole opening with a cast-iron frame and cover to provide access for cleaning and removal of silt in order to maintain successful performance and efficiency in operation.

Infiltration

The rate of infiltration depends on the nature of the subsurface material, the hydraulic characteristics and permeability of the sands and gravels, their effective size, coefficient of uniformity, capillarity, and frictional resistance.

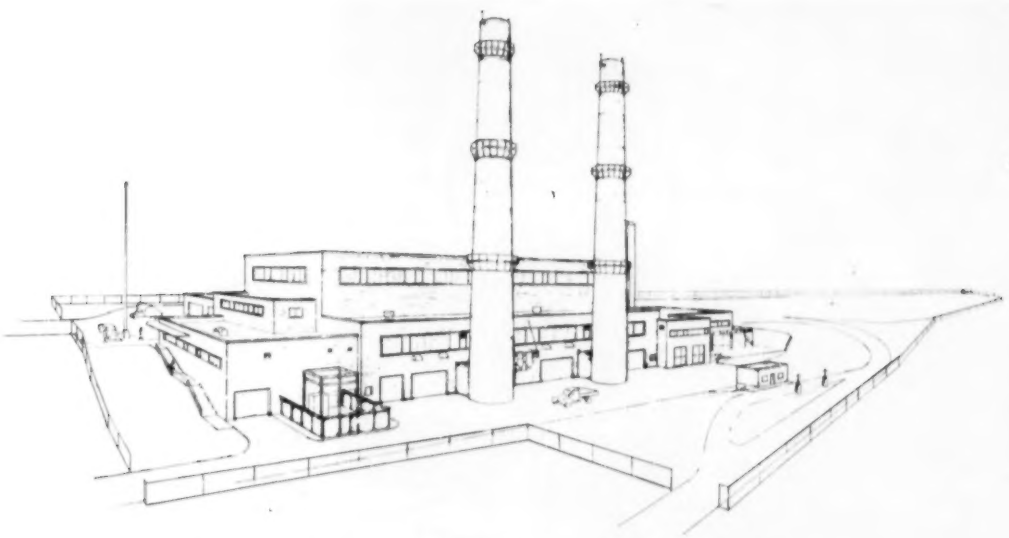
Tests have indicated infiltration rates up to 440 gallons per square foot of seepage area per day. We find that the wells work best when the bottom of the well is not less than 6 feet below the highest ground-water level.

On large projects, test boring should be made with a well drilling rig at the proposed site to a depth of at least 20 feet below the static ground-water level by means of a soil sampler of the split-steel tube type for mechanical analyses of the subsurface materials.

The pipe-drainage system discharging storm water into the diffusion wells have catch basins, permitting the heavy silt to settle out before entering the well. These basins require cleaning periodically. Slotted, reinforced-concrete pipe is used in the storm drain lines.

The system of diffusion wells is another development used here on Long Island to protect the ground-water resources. When the ground water is destroyed, much of the area will become desert.

* Mr. Welsch is senior civil engineer for the Nassau County Department of Public Works and has participated actively in the development of ground-water recharge systems throughout Long Island. His address is 18 Wellington Road, West Hempstead, N. Y.



The architects's drawing for the city's new 800-ton incinerator No. 4.

Sanitary Fills To Go In Baltimore

By WILLIAM P. FANNON
Sanitary Engineer
Baltimore, Md.

THE sanitary fills are about to become a closed chapter in Baltimore's sanitation history. The city's new 800-ton incinerator No. 4, currently going into construction, will double our incinerator capacity and permit us to eliminate all sanitary-fill operation. The fact that we have become dangerously short of land for these fills has made this new plant a welcome and much-needed addition to our sanitation program.

The plant will consist of a three-story incinerator building with double two-story wings containing offices, shower, and locker-room facilities. One wing will provide facilities for approximately 75 men on refuse-collection duty.

Mechanical Stokers

The four furnaces in the new plant will be equipped with the Flynn & Emrich hydraulically operated stokers similar to the units recently installed at the No. 3 plant on Reedbird Avenue. From experience gained with these grates, the city feels confident that the plant will burn even more than the 800 tons per day of design capacity.

The four furnaces are being erected by the Pittsburgh-Des Moines Steel Company. Each will be rated at 200 tons per 24 hours and will have a furnace volume of 2,225 cubic feet. Each will connect to a combustion chamber with a volume of 3,300 cubic feet. Combustion chambers will connect to two expansion chambers whose total volume is 4,400 cubic feet.

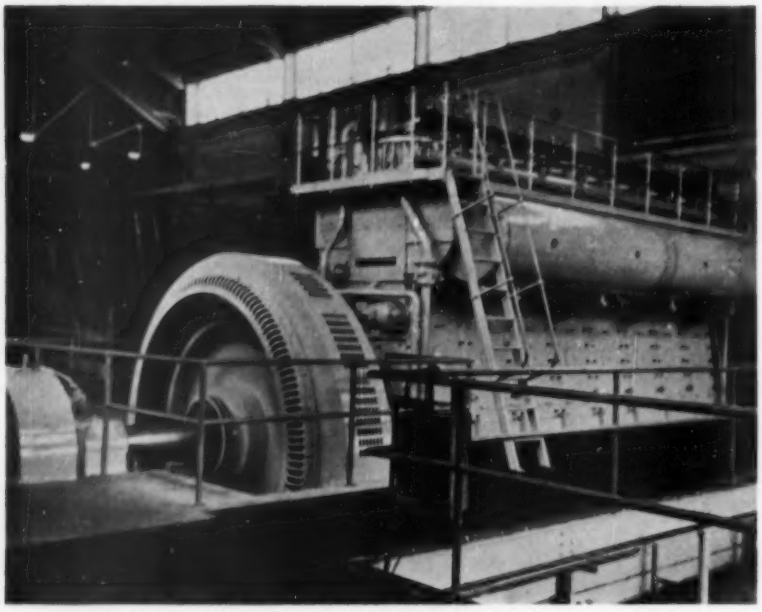
The plant will have an independent oil-fired heating system. Originally, we contemplated reclaiming the heat generated. However, studies indicate that the cost of the special equipment required and the short anticipated life of boilers operating on the hot refuse gases make it more economical to waste the heat and use independent oil-fire facilities for heating the building.

We are building a central vacuum-cleaning system into the plant that will help keep it clean and will aid in cleaning the furnaces. The plant on Reedbird Avenue has to be shut down one day each week to permit men to clean the flues and combustion spaces. The crew has to go down into the hot areas with shovels and wheelbarrows. Even with the plant down for 24 hours, the temperatures are so high that they can work for only a few minutes. The new vacuum system replaces this arduous work.

As in the case at the Reedbird Avenue plant, the new incinerator will include facilities for disposing of small dead animals. This has been an annoying problem in the past because rendering plants and other commercial establishments have not been interested in disposing of small animals even though they are anxious to have carcasses of horses and larger animals.

Ventilation of the ash-removal floor at the Reedbird Avenue plant has been a problem also. However, in the new plant, the ash-removal floor will be entirely open along one side so that trucks will be able to enter from the side of the building; the fans used for forced draft through the incinerator will draw the air from the ash floor and blow the smoke and fumes back through the furnaces.

Plans and specifications for the building and the furnaces are being prepared by Whitman, Requardt & Associates, engineers, and Lucius R. White, Jr., consulting architect, both of Baltimore. The new plant is expected to be ready for operation in the late spring or early summer of 1955.



The dual-fuel engine is triple the size of any of the city's generating units.

So Rochelle, Ill., rebuilt its power plant with a triple-sized dual-fuel engine and a complete set of new auxiliaries

Halfway Measures Don't Work

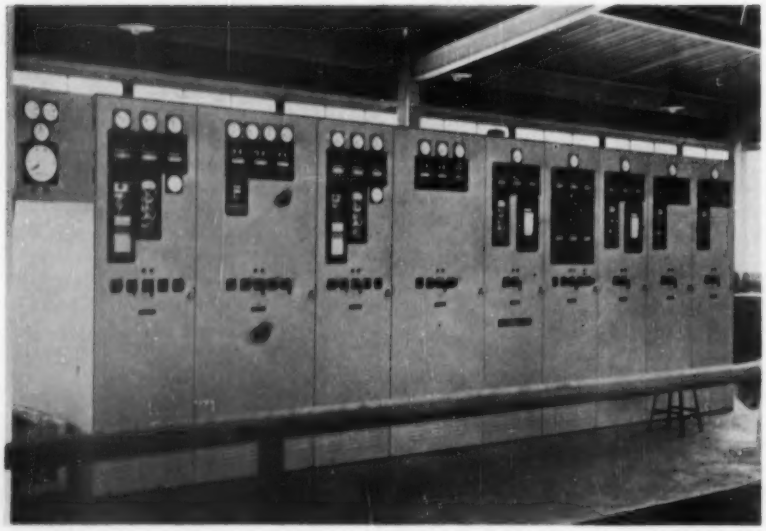
By LYLE BRADY
Superintendent of Municipal Electricity
Rochelle, Ill.

ROCHELLE'S municipal electric plant is one industry that has been continuously depression-proof. Even during the economically blighted years of the early 1930's, the demand for electricity grew steadily, forcing us repeatedly to re-evaluate what we thought was our most bold and far-seeing estimates. We are now required to supply power for about 5,500 inhabitants of this northern Illinois city.

Rochelle has made considerable progress since the booming 1928-29 era, when the plant generated 1,913,500 kwhrs in a 12-month period. In spite of the depression, the amount of electricity generated always exceeded this figure. By 1938, production had doubled, and by 1943, it was four times as great. Production passed the 10,000,000 mark in 1948. In 1928, the peak load was 635 kw, while today it is 4,500 kw.

Early Modernization

We began junking our old steam plant back in 1920 and became an early convert to the flexibility of diesel-power generation, so useful to smaller cities. However, we installed the engines on a "Topsy" basis until



Metal-clad switchgear governs the operation of the additional generating units.

1946 when we put into service what we thought, at that time, was a big engine—a 1,050-kw Nordberg.

Two years later, we found that the engine needed help, so we installed a second, also a Nordberg, but of the Duafuel type. In that same year, we were fortunate enough to acquire a second-hand 1,000-kw opposed-piston type of diesel engine originally used by the Navy. While it wasn't the happiest addition, it carried us through the critical war years when priorities put a brake on power-plant development.

However, as the power load increased, we became aware that our whole electric generating situation would have to be reviewed. Consequently, we retained Stanley Engineering Company, a consulting firm in Muscatine, Iowa, to study our plant and make recommendations.

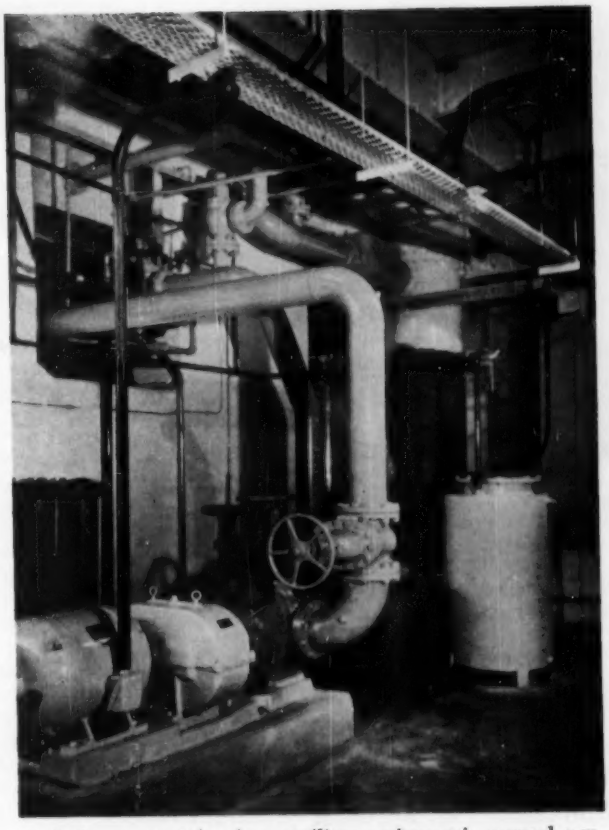
Results of Study

This company's analysis brought to light many inadequacies that were not always as obvious as the lack of generating capacity. For example, our cooling-water facilities were short. Also, we had to abandon the idea of installing more generating capacity in the existing plant and provide an extension to our power-plant building. Moreover, we had to set our sights on generating capacity three times higher than we ever had considered before. The engineers gave us a design for an expansion program that appeared most practical.

With these recommendations, we started our new building program in January 1953, and completed it one year later. The principal unit in this addition is a Nordberg eight-cylinder, two-cycle Duafuel engine rated at 3,440 hp and 225 rpm. An Elliott motor-driven, centrifugal blower handles scavenging; the blower has a capacity of 17,200 cfm. The big Nordberg drives a Westinghouse generator rated at 3,000 kw, making the combination triple the size of any generating unit in the plant. An American Air Filter Model CMS conditions the air used in the engine.

Generator Production

The new generator produces power at 4,160 volts. G-E metal-clad switchgear controls the 3,000-kw unit as well as the 1,050-kw combination installed in 1949. A tie breaker is provided for a 3,750-kva transformer connecting the existing 2,300-volt station bus to the new 4,160-volt bus, together with breakers for the control of three 4,160-volt distribution circuits to carry the current.



In the basement of the plant, auxiliary equipment is grouped compactly. Shown in the picture are the Blackmer emergency lube-oil pump, the Nugent fuel-oil filters, the Ross lube-oil cooler, and the Nordberg magnetic oil seperator, all serving the new engine.

The cooling-water system has been completely reconstructed. We now have an induced-draft type spray-coil tower supplied by J. F. Pritchard & Company, new raw- and jacket-water pumping facilities, and new jacket- and raw-water headers. All piping in the new addition to the power plant is color-coded for safety and ease of identification.

The building that houses the new generating unit provides floor space that measures 50 feet wide and 83 feet long. It is supplied with a crane that spans the 50-foot width and is located 25 feet above the operating floor. The basement houses fuel and lubricating oil auxiliaries, starting-air tank and compressor, station batteries and power transformers. The building also provides space for another 3,000-kw unit when needed.

Gas is purchased at 40 cents per 1,000,000 BTU. We use No. 2 pilot fuel obtained from the Standard Oil Company of Indiana at a cost of 10.67 cents per gallon. The oil-burning diesels use a straight Texas crude oil, with a 22 SPI gravity, that costs 10.93 cents per gallon delivered. All storage tanks containing crude oil are provided with hot-water coils for heating. Exhaust mufflers provide the hot water needed for this purpose.

Community's Enterprises

The municipal electric utility in Rochelle is one of the community's largest enterprises. It serves the area, charging a reasonable rate, and is able to contribute $54,000 annually toward the operation of the city's general activities.

Industries contributing to this prosperity are the Austin-Western division of Baldwin-Lima-Hamilton, producing street sweepers and road rollers; Caron Spinning Company, largest processors of wool east of the Mississippi River; Morgan Dye Company which bleaches and dyes wool; and the California Packing Corporation, which is a packer of food products.

Furthermore, a trip through the stores on Lincoln Highway will quickly convince one that the farmer is a steady customer of the plant.

A truck delivers rock salt which is applied to the pulverized, moistened base material at a rate of 6 pounds per sq. yard.

A pneumatic-tired roller compacts the stabilized base course so that the brine then comes to the surface and crystallizes.

Salt Makes A Good Street

Raleigh, N. C. develops salt-stabilization methods that give high service results at low cost

By WARREN J. MANN
Director of Public Works
Raleigh, N. C.

The finished roadway surface is dense and dustfree.

COMMON salt, or sodium chloride (NaCl) as chemists call it, is a basic necessity vital to man's existence, and has a history as old as the story of life on earth. We are adding to one of the lesser-known phases of this story by using this valuable chemical to stabilize our residential streets. Our results, so far, have been splendid.

In Raleigh, we have 50 miles of so-called stabilized streets. Most serve the low-rent, residential sections of the city. Through the years, as part of our general maintenance program, we have been mixing crusher-run stone with the subgrade material. However, this process results in dusty streets during the summer months.

We had heard that salt could correct this difficulty, and finally decided to try it. With the cooperation of the Morton Salt Company, we mixed salt with the material in the street on two small sections, and were gratified with the more dense and lasting wearing surface that resulted.

First Test Section

Our first test section was only 0.62 of a mile long. The base material here is a plastic clay that is very difficult to work. We followed customary stabilization procedure, first scarifying the base to a depth of

5 inches, then pulverizing the scarified material by blading it with a Galion motor grader. At the same time, we moistened the base material until it had reached its optimum moisture content for maximum density as indicated by the Proctor test.

We then windrowed the material to the center of the street and leveled it sufficiently to permit a 2-ton Ford dump truck with a Gibbs spreader gate to distribute the rock salt. The application rate selected was 6 pounds per cubic yard of material to be stabilized. We moistened the salt slightly and mixed it with the windrowed material, allowing it to dissolve and coat the soil particles with liquid brine.

We then applied one more light application of water and bladed it to a cross section of 20 feet in width and a crown of 5 inches. A rubber-tired roller compacted the base while the grader kept it in proper shape. The brine, under capillary attraction caused by the rolling operation, then crystallized on the surface and formed a dense and practically watertight and dustfree surface with a glazed finish.

Second Section

The second section in our salt-stabilization experiment embraced a half mile of street leading from one of our largest Negro housing projects. This street carries large volumes of car, truck, and bus traffic every day, and we were anxious to discover how our salt stabilization would stand up under this load. These streets had also been stabilized to a limited extent with the use of crusher-run stone.

Here again we scarified the first 5 inches, making sure that we had enough coarse aggregate. It is well known that the coarse aggregate has to carry the load while the soil holds it in position and the salt keeps the soil from disintegrating because of lack of moisture and traffic abrasion.

Following the procedure developed on the earlier test, we again applied rock salt at the rate of 6 pounds per cubic yard, bladed it thoroughly, shaped, and then compacted it with rubber-tired rollers. We permitted traffic to use the street throughout the work.

After the street had been allowed to cure for several days, we then gave it an asphaltic surfacing treatment with an Etnyre asphalt distributor. We first applied a prime coat of Bunker C residual oil at the rate of 0.2 of a gallon per square yard and allowed it to cure for several days. AE-3 emulsified asphalt, applied at the rate of 0.25 of a gallon per square yard, covered the prime coat, and was topped immediately with crushed stone at the rate of 28 pounds per square yard.

We then placed another application of AE-3 emulsified asphalt at the rate of 0.32 of a gallon per square yard, covering it with 15 pounds of stone per square yard. The stone in the lower layer differed from that used in the top somewhat. Grading for both met with the following specifications:

Screen	Per Cent Passing Lower	Upper
¾-inch	100	100
½-inch	95–100	100
⅜-inch	75–90	100
No. 4	25–50	95–100
No. 8	.....	45–65
No. 16	0–4	10–15
No. 200	0–0.5	0–1

Cold Weather Test

This section is now experiencing its first winter, and we shall now discover how well it can take severe cold. However, we see no reason why it should not be able to withstand any freeze. As is well known, salt brine is a good antifreeze agent and should provide good protection against frost heaving. From all appearances, the asphaltic surface treatment bonded firmly with the stabilized base.

The cost of this type of work is attractive. Our salt costs ran from 1 cent to 2 cents per square yard. Manipulation, if applied to longer projects, should not run over 12 cents per square yard. The surface treatment ran an additional 15 cents per square yard. Of course, if coarse aggregates have to be added to reduce the plastic index of the subgrade soils, the cost will increase proportionately.

How to Get Special Assessment Improvements in Kansas City, Mo.

RESIDENTS of Kansas City, Mo., who want to know how they can obtain special assessment improvements, such as street pavements, sewers, sidewalks, and neighborhood parks and playgrounds, can get all the information they need from a handy booklet issued by the city. Titled "Let's Talk About Public Improvements Financed by Special Assessment," the booklet sets forth in detail the steps that must be followed from the time that a group of residents decide that they would like a sidewalk or sewer to serve their homes to the time that they receive tax bills to cover payments for the new improvements.

After improvements are in, property owners have the option of paying their bills in full, interest free, within 60 days after the bill is issued. For those who choose to pay over a longer period of time, they have the option of making full payments on unpaid balances at any time, thus saving on interest charges. Information about the booklet may be obtained from the Office of the City Manager, City Hall, Kansas City 6E,

Let's talk about
PUBLIC
IMPROVEMENTS
Financed by
Special Assessment
Here are the answers to your questions on how to obtain public improvements of a local benefit nature – pavement, sewers, sidewalks, water mains, playgrounds, etc., in Kansas City, Mo.

Cover of Kansas City's Special Assessment Booklet.

Editorial Note. THE AMERICAN CITY takes pride in the fact that back in November 1910 this magazine carried an article on "The Park and Boulevard System of Kansas City, Mo.," in which special credit was given to the benefit assessment method of financing neighborhood parks and playgrounds. Thanks largely to the success of that device, supplemented by donations from public-spirited citizens, Kansas City can now boast a system of 52 parks with a combined area of approximately 2,900 acres.

Lewiston clears both streets and sidewalks in its snow-removal program

Sidewalks get a nonskid treatment in the Lewiston snow-removal program. (Insert) Rugged equipment fights rugged snowfalls.

Every Street Is Plowed

THE more service the public gets, the more it demands—a rule that has had ample opportunity to prove itself in Lewiston, Maine. About 20 years ago, five trucks and two tractors needed almost two days to open the city's streets and roads after an average storm, providing that the snow was not drifting. Horse-drawn plows and two crawler tractors cleared the sidewalks.

Today, the 120 miles of improved streets and 80 miles of unimproved roads can be cleared in less than eight hours, with the help of modern, mechanized equipment.

Public Works Director George Maher and Chief Mechanic Lucien Couture use heavy, substantial equipment for this work. They have three heavy-duty, four-wheel-drive trucks—one Oshkosh, and two FWD's with Frink V-plows and wings—that crash through the large drifts on the country roads and outlying streets, and 12 conventional-drive trucks with blade plows to open the streets in business and compactly built residential areas. Two 12-ton power graders, one Adams and one

Caterpiliar, then windrow the snow that is to be picked up.

Prior to 1937, snow was removed from the business district only, by horse- and tractor-drawn scoops. In 1937, the city purchased its first Barber-Greene Snow Loader, making it one of the first in this area to adopt this labor-saving and cost-cutting type of equipment. The department now has two Barber-Greene Loaders that pick up the snow in the business area, around churches, and in as much of the thickly populated residential area as time permits between storms. The snow is transferred to trucks and hauled to the Androscoggin River for disposal.

Versatile Equipment

Practically no equipment is permitted to do a specialized part-time job in the department. The Oshkosh truck carries an 8-ton Gar Wood crane, and has a rear-mounted fifth wheel. This enables the truck to pull a 25-ton Rogers low-bed trailer that can transport heavy tractors and power shovels, tree stumps, and other bulky items to various parts of the city. One of the FWD's carries an Elgin Eductor catch-basin cleaning machine. The other FWD has a 6-yard dump body. The Barber-Greene loader units are equipped with conveyors that will load sand, gravel, and other materials during warm months.

To clear the sidewalk, the crews use Anderson plows on Case and International rubber-tired tractors. International and Oliver crawler tractors are assigned to this job when the snow ridges become high and the snow too deep for the wheel units. These same rubber-tired tractors will pull rotary-type sand spreaders, which are manufactured in the city shops, to sand the sidewalks.

Ice Control

To control ice and make snow easier to handle, the department likes to use pure rock salt, spread by Tarco "Scotchman" spreaders. However, in the cold Maine climate, the crews have found that the salt may not have the immediate effect it should when the thermometer signals bitter temperatures ahead. So Mr. Maher adds calcium chloride to the salt to hurry the action.

The amount of calcium chloride used varies with the temperature. In extremely cold weather, when the temperature falls lower than 10° F. below zero, the trucks may carry all calcium chloride. From that point to 10° above zero, the trucks may carry one part calcium to three parts salt. As the weather moderates, the trucks will carry salt only.

Throughout the winter, pure salt will be used for most of the work and the calcium chloride requirements will be small. The hills and about 15 miles of the main traffic arteries are kept bare with salt and calcium. This mileage is increased every year.

The average annual snow fall in the last few years is 86 inches; the low was 43.85 inches last year, and the high 127.7 inches three years ago. Each year has an average of 12.4 storms of 2 inches or more. The deepest snow storm during this period occurred three years ago when 26 inches fell at one time.

Loader Licks Snow Problem

(Above) Frozen, hard-to-handle windrows of snow present no great problems to St. Paul's versatile loader. Light, (Below, left) freshly fallen snow is cleared with greater speed by the same type of snow-removal equipment.

SNOW removal in St. Paul, Minn., means loading 25 cubic yards a minute into the truck. It also means dependable performance, whether the snow is freshly plowed and windrowed, or whether it has had the opportunity to become icy and hard to remove.

One of the units that St. Paul uses to clear snow is an Athey "force-feed" HiLoader. The loader has a swiveling conveyor that swings from side to side under hydraulic control to allow one truck to get into position while another is being loaded. The machine sees use the year around, and has demonstrated its ability to load as much as 10 cubic yards of earth or other material per minute during the snow-free months.

How a Manager VIEWS a Councilman's Job

By DONALD J. WARING
Town Manager
Dexter, Maine

THERE are 10 items that I believe should be essential qualifications or practices of a councilman. These qualifications are not necessarily presented in order of importance, for I feel sure that any one of them could take precedence in a given situation.

1). Support of Council-Manager Plan

An understanding of the theory of the council-manager plan in conjunction with observations of the accomplishments of the plan, are the foundations upon which a councilman can build his support of the plan.

Differences of opinion regarding the feasibility of the plan should be openly discussed with the council and the manager. If this is done, I believe that many of the questions will disappear. However, to take a negative approach to the plan is to act counter to the wishes of the people who voted for the plan.

Much of this is also true regarding the manager. He is your appointed administrator. As such he carries out your wishes. Failure to support your manager reflects a weakness on the part of the council, either in understanding of the job or in choice of the manager.

If the council, after full consideration, does not feel that it can openly support its manager, then, I believe that the interests of all would be best served if a new man were appointed. At times, dissatisfaction with municipal government is owing not to the *form* of government but rather to the *men* of government, be it the manager or the council.

2). Know Your Municipal Government

City councilmen, upon election, should study their city charter or state enabling act and city ordinance, in order to obtain a basic understanding of the powers and duties of the city council and the city manager. It is imperative that city councils know what constitutes the manager's job, so that they will not spend their time in the realm of purely administrative matters.

Policy determination should be a councilman's primary duty. It is often the case, however, that individual councilmen, lacking an understanding of the theory of council-manager government, will undertake an administrative rather than a policy determination analysis of a problem.

3). Foresightedness

Today, and rightly so, people expect more and better services from their municipal governments. Better highways and schools, faster snow removal and garbage collection, more sidewalks and sewers, have become the bywords.

Should our city councils refuse to heed the call for these services and neglect to anticipate the needs of the future through proper planning, our cities will reach a financial point of no return. Sooner or later the requirements will become so dominant that councils cannot ignore their presence.

Councilmen who refuse to look ahead are for the most part "penny wise and pound foolish" and are but delaying the day when perhaps their successors will have to atone for the errors of the past.

EDITOR'S NOTE: This article is based on a paper delivered by Mr. Waring at the Eighth New England Manager's Institute held at the University of Maine during August.

4). *Constructive Criticism*

No manager has the right answer 100% of the time; mistakes can and do happen. Therefore, during the discussion of any problem or project, I believe the manager will welcome constructive suggestions.

For myself, comments from the council that help me solve a management problem by pointing out some facts that I have overlooked, or that I do not happen to be familiar with, are most appreciated. Anyone or anything that helps me with the job of management also directly helps the city for which I work. I believe, therefore, that constructive criticism by councilmen is just as much a part of their duty as is voting on a proposed ordinance.

5). *Delegation and Authority*

A city council cannot expect a manager to function properly without the authority necessary to carry out his administrative duties. Should the council retain the right to hire and discharge certain personnel, for example, the manager's position with his employees is not basically sound.

Perhaps just as important, the city council would have to spend considerable time reviewing employee grievances that could and should have been handled as part of the manager's administrative work. There are other cases, of course, where councils leave their sphere of policy-making to become administrators, each one in turn tending to weaken the manager's position. A manager must have the proper tools of his trade; authority is one of the most important.

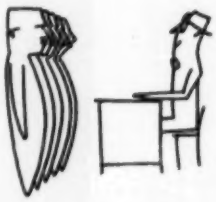
6). *Decision and Action*

After full discussion and consideration of a problem, city councils should take the necessary action and not delay or "pass-the-buck" with the idea that the whole matter will soon be forgotten. I do not imply hasty decisions, but I do feel that, whenever possible, matters should be decided and carried to completion.

Managers must often face some irate taxpayer with the answer that the council is still considering the problem. If the answer must be a negative one, then, I believe that it is better said than left up in the air. Minor though the problem may be to the city as a whole, it is still a major item to the taxpayer who is seeking an answer.

7). *City-Wide Thinking*

With the exception of items such as repairing a sidewalk or adding a street light, councilmen should analyze public improvements on a city-wide basis. Would this public works program be advantageous for the entire city? Is that the proper location for a new playground? When councilmen lose sight of the entire city as a unit and think only of their particular district, the city government tends to degenerate into a bartering ring with each participant giving here and taking there as it best suits his individual aims.



8). *Collective Dealings With the Manager*

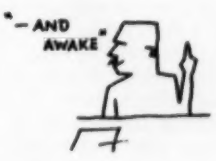
Except for occasional visits to city hall, which should be encouraged, councilmen should deal collectively with the manager. If one councilman is continually on the scene, the manager's position is in jeopardy. More especially is this true where councilmen make individual requests of department heads or other employees.

Any matter pertaining to the work of the city should be brought to the attention of the manager, so that he can take the necessary action. To act otherwise will definitely confuse the employees and weaken the administrative position of the manager.

9). *Attendance*

During the year, city councilmen are called upon to attend regular and special meetings of the council, public hearings, inspection trips, joint meetings of committees or boards, and informal sessions pertaining to city business. If a councilman expects to best serve the interests of his community, it is imperative that he attend as many of these meetings as possible.

It is the usual practice of city managers to prepare a full report, both oral and written, covering a given situation for discussion at these meetings. If a councilman is not in regular attendance, he will undoubtedly miss some of that background material and will not be prepared when the matter comes to a vote or when he is questioned on the subject by a citizen.



10). *Interest*

Fundamental to all is interest. Too often, after election, we hear that the active Mr. Doe has fallen by the wayside, seemingly because he feels that by merely being elected he has satisfied those who supported him and has paid his debt to society.

It is lack of interest, for the most part, that permits other more aggressive individuals to assume leadership and obtain the personal satisfaction of getting things done. This same lack of interest can also lead to getting the wrong things done.

Of course, there are many other points worthy of discussion on this subject, but I feel that these 10 suggestions should be considered by all councilmen who wish to have better relations with their manager and best serve the interest of their city—the latter being the primary aim of both the councilmen and the manager.

The hard, useless cakes of sludge are shredded by the grinder and simultaneously loaded into a small

Grind the And Win

Bowling Green, Ohio, finds a little grinding makes the sewage sludge easy to handle as fertilizer and saleable to the public

By L. B. BARNES
Superintendent of Sewage Treatment
Bowling Green, Ohio

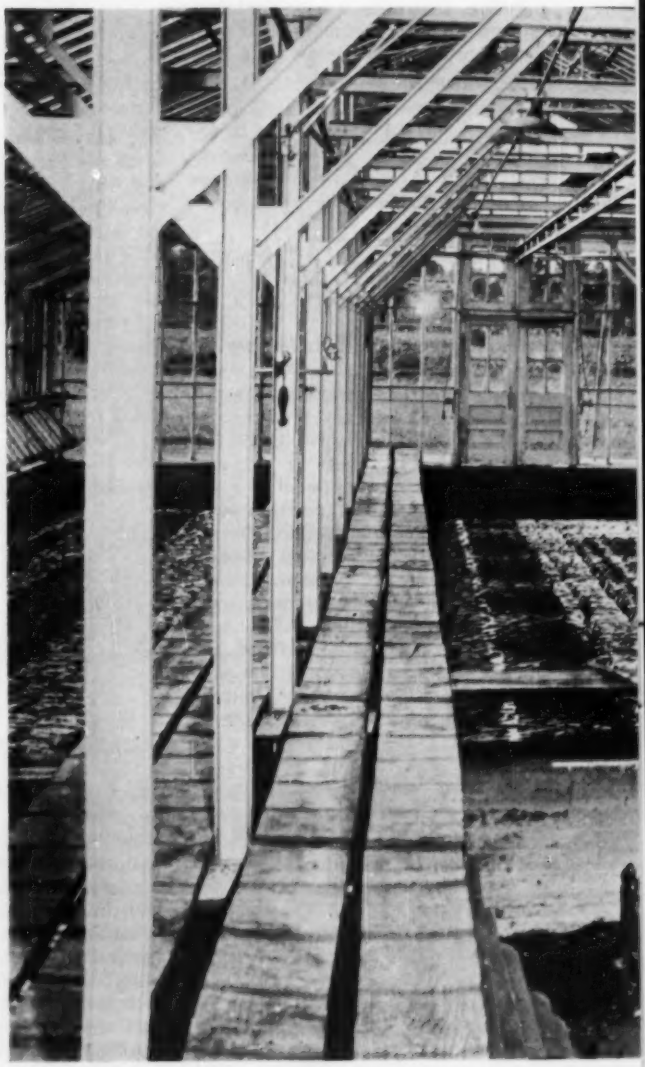
SLUDGE disposal has been our only problem at the Bowling Green (Ohio) sewage-treatment plant. Of course, we always have had minor irritations, but, in general, 20 years of outstanding performance has earned the plant a reputation for being the "largest little sewage-treatment plant in Ohio," meaning that it does one of the most thorough jobs of purification in our state. The plant serves about 12,000 people, providing primary settling and secondary oxidative treatment and producing a very stable effluent. We were one of the first to use the Dorr Multdigestion process for sewage-sludge digestion.

The plant started operating in October 1935. It is a trickling-filter type of plant, with a capacity of 4 mgd (million gallons daily). Fortunately, the designers were foresighted enough to make the plant sufficiently large to allow for increased loads. We have not yet exhausted the plant's design capacity; our average daily pumpage is only slightly over 2 mgd.

Since we are only 3 miles from the receiving stream, we have to put out a good effluent. In dry weather, we put more water into the stream than there is flow above the point where the effluent enters. The stream suffers no pollution damage from our treated sewage—on the contrary, it probably is improved somewhat.

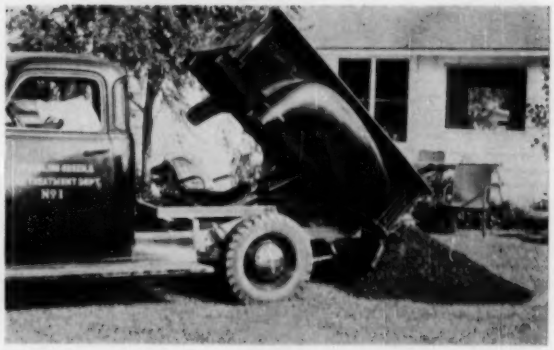
However, the sludge, a by-product of every sewage-treatment plant, threatened to become a problem. The cost of incineration was prohibitive. The State Department of Health frowned on the use of lagoons because of their potential danger and the nuisance they often create. The only remaining solution was the use of sludge-drying beds and the irksome task of hauling the sludge away.

At first, our local citizens used the cake as a fertilizer, and we gladly distributed it without charge. But potential customers found that they had to shred the



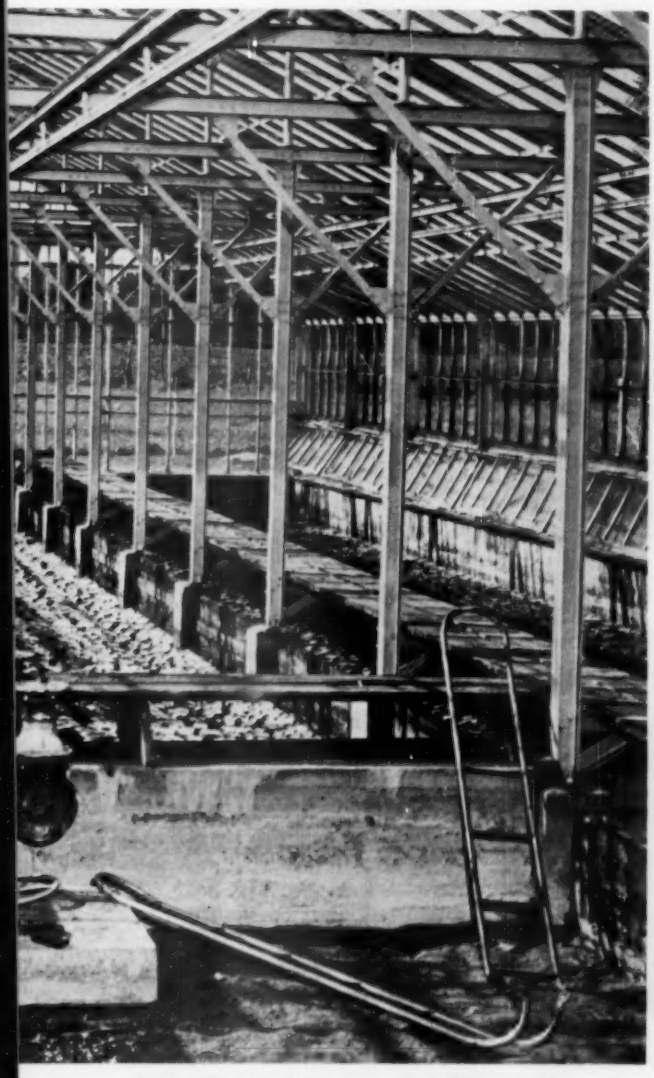
The plant uses glass-covered drying beds, at right. However, Bowling Green was unable to induce residents to cart away, without charge, the unwieldy and unprofitable dried sludge.

dump truck which shortly will deliver the fertilizing particles to the lawns of residents who have placed advance orders.



Sewage Sludge Public Favor

hard lumps of sludge before they could use it, an obstacle that put a stop to their calls. Nevertheless, everyone agreed that the stuff was wonderful for lawns, shrubs, and flower beds. The Bowling Green State University helped us temporarily by using a large quantity for lawns around its newly erected buildings.



I was anxious to institute a permanent and dependable method of disposing of the sludge. So, in 1940, I began to ask for a sludge grinder. I ran into difficulty, however. At the time, the plant was directly supervised by a service director appointed by the mayor. As service directors changed frequently, I would just about get one director sold on the idea when I would find a new director at the helm.

This difficulty was corrected in the early part of 1945 when the City Council voted to put the operation of the sewage-treatment plant under the newly formed Utility Board that operates the electric and water plants. There was some opposition, but the Council showed fine civic leadership by passing the ordinance despite protests. At this point, let me express my humble and grateful approval of the Utility Board and its manager—a group of levelheaded and progressive businessmen.

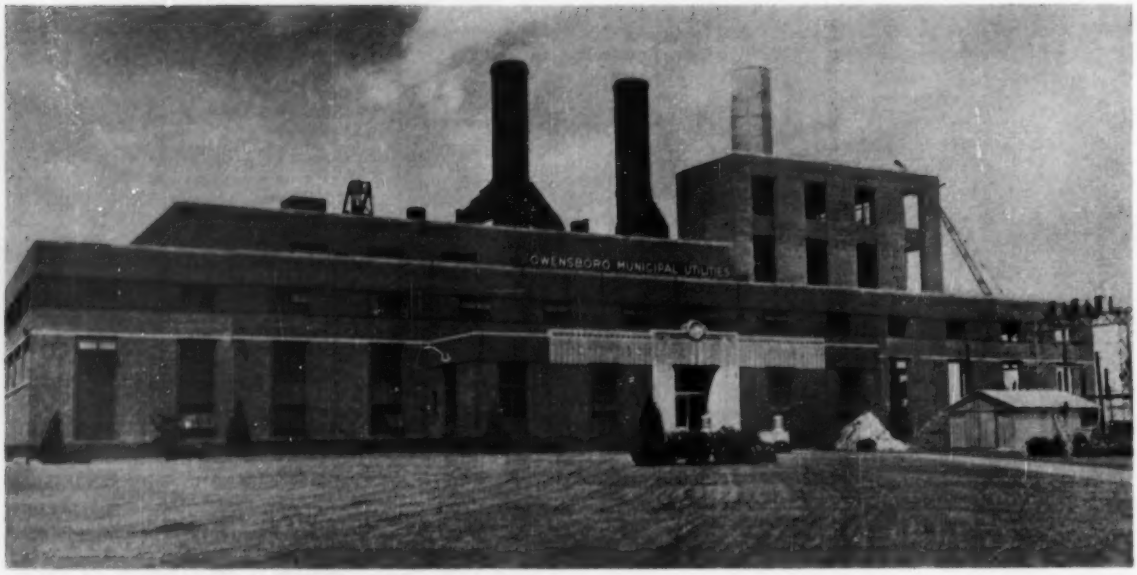
One of their first acts typified their leadership—an increase in the sewer-service rate. For more than 10 years, we had been operating on a rate established during the depression. The years of equipment replacement, repairs, and increases in wages had begun to take toll of the surplus built up for our operation fund. The increased rate put us back on a self-supporting status.

Grinder Gets Approval

About two years ago, I requested that a Royer grinder be included in the forthcoming budget. As was perfectly natural, the Board asked how long it would take for the machine to justify the investment. I estimated that it would pay for itself in two years, assuming that the public would find the sludge useful and would pay a nominal fee for it. The Board thought this logical and gave its approval. Currently, we are selling the sludge for $5 per cubic yard, delivered.

Our Model NBS-4 grinder, a product of Royer Foundry & Machine, of Kingston, Pa., arrived during the latter part of April, a little late for the spring fertilizing of lawns and flower beds; however, during the first seven months, we earned 90% of the unit's cost. Demand was created by a word-of-mouth campaign.

We have a ½-ton Chevrolet pickup truck equipped with a Daybrook hydraulic, dump body which makes quick deliveries. This dump body conveniently holds a cubic yard. Our grinder has eliminated our last major plant problem. It has provided us with a comfortable supplemental income, and has enabled us to win favor with the 12,000 people we serve by supplying them with an easily handled and useful fertilizer.



Owensboro's water (left) and electric plants (right) occupy a common site. The electric plant is currently being extended.

It Is Better to Soften the Well Water

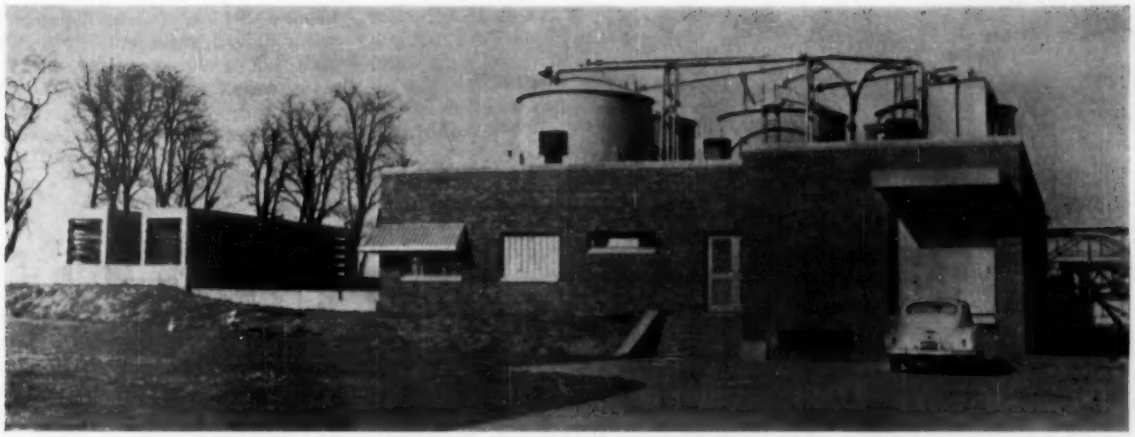
. . . than to treat Ohio River water and free it from offensive tastes and odors

By ELMER SMITH
Superintendent of Utilities
Owensboro, Ky.

Meter testing is an important and continuing activity in Owensboro. John Gallagher, meter engineer, is shown testing the accuracy of six meters on a Neptune test bench.

OWENSBORO, a northwestern Kentucky city of 40,000 people, sits on a bend in a bank of the "Beautiful Ohio," a river that has been celebrated by one of the best-loved songs in American musical history. Nevertheless, Owensboro has had to turn its back reluctantly on this historic river and seek water for its homes and industries elsewhere. Many changes have taken place since "Beautiful Ohio" was written. One has been the introduction of sewage and industrial wastes into the stream in such quantities that problems of water treatment have compelled us to abandon the Ohio as a source of water supply.

For more than half a century, the city has resorted to the use of wells for our supply. The wells from which we draw are located north of the city in the immediate vicinity of



Aeration, chemical handling, and settling, all are combined in these structures.

the Municipal Water and Light Plant. They average 100 feet in depth and yield approximately 9 mgd (million gallons daily). Unfortunately, this water is hard. However, we find it easier to remove the mineral hardness of this water than to overcome the problem of offensive tastes and odors introduced by the objectionable wastes in the river water. The raw water has about 350 ppm (parts per million) of hardness of which between 60% and 70% is of the carbonate type.

Anticipate River Use

At various times in the half-century life of our system, enlargements of the plant have been necessary. The most recent took place two years ago when added plant capacity was supplied to overcome the increased load imposed by the healthy post-war growth that the city has experienced. The improvements were designed to treat 10 mgd, or 1 mgd more than the well field can produce. Thus we are faced with the prospect of inadequate supply from our well fields and the need to eventually use the Ohio River water, whether we like it or not.

Fortunately, Ohio River water is scheduled for improvement. The Ohio River Water Sanitation Commission, an interstate organization which is supported by five separate states, has been dedicated to the task of reclaiming this historic stream, and already has made much headway.

Pumping Rate Cut

In the meantime, we must use our well field as efficiently as possible. We have discovered that the life of these wells can be extended materially by reducing the pumping rate. We had been pumping water at rates of 700 gpm to 1,000 gpm (gallons per minute) with the result that the gravel walls became clogged with sand. However, at a rate of 350 gpm to 400 gpm, we can expect good service for at least another 20 years.

Our well field covers approximately 23 acres. We have 18 wells in the area, of which all but one is of the gravel-wall type installed by Layne Central Company, of Memphis, Tenn., each with a Layne deep-well turbine pump. In our expansion program, we will have three new wells, each equipped with a Layne submersible pump.

To boost the treatment capacity of the plant to its new 10-mgd capacity, we virtually rebuilt it. We added facilities that included a chemical building, aerators, flocculation and settling basins, recarbonation and chemical-handling equipment.

Four New Filters

Four additional rapid sand filters were included in an extension of the filter building. Additional clear-well capacity of 3 mgd was provided just prior to the expansion of the treatment facilities. The treatment reduces the hardness of the water to about 100 ppm, a degree of softening requiring between 1,150 and 1,250 pounds of lime per 1,000,000 gallons. About 100 pounds of soda ash per 1,000,000 gallons are needed to reduce the noncarbonate hardness.

Under the present system, the water first passes through a new cascade-type aerator consisting of four units operated in parallel. The aerator units consist of five coke trays spaced 14 inches apart and designed for a loading of 25 gpm per square foot of surface for aerating the water.

The water then flows to a Link-Belt propeller-type flash mixer through a Parshall flume that records and totalizes the raw-water flow as a guide to chemical dosage. In the rapid mixer, the water is intimately mixed with the chemicals for about 30 seconds. The vertical-shaft type of mixer blends the lime and soda ash with the water at this point. Wallace & Tiernan gravimetric feeders apply the lime and soda ash; duplicate gravimetric feeders and slakers are provided for the lime. The alum feeder has a top feeding rate of 100 pounds per hour. The lime and soda ash feeders have a top rate three times this figure.

Chemical Handling

Soda ash, lime, and alum are stored in hopper-type bins mounted over the feeders. Dracco pneumatic, chemical-handling equipment transport these chemicals from railroad cars located on the power-plant spur track to the hoppers. The chemicals are taken from a railroad siding 300 feet away and stored in circular metal bins on top of the chemical building.

Part of the chemical building sits conveniently over the mixing basins. In this building are the laboratory, washroom facilities, and storage space for chlorine cylinders and chlorinators should we decide to utilize river water. The building also houses sludge tanks and pumping equipment for the recirculation of lime sludge. The experience here indicates definitely that the recirculation of sludge is beneficial and reduces the total lime requirements materially.

Flocculation takes place in basins located beneath the chemical build-

ing. The flocculators are of the Link-Belt type, having three sets of paddles, two revolving in one direction and one in the opposite direction. The basin provides 30 minutes of slow mixing at its design rate of 10 mgd.

Covered Settling Basins

The water then passes to the primary settling basins. These consist of two units, normally operated in parallel. Both are covered to prevent the growth of algae that occurred in the old basins. The basins are equipped with Link-Belt straight-line collectors which draw the sludge back to hoppers at the influent end of the basin. From these hoppers, the sludge is blown off to a sludge sump by means of hydraulically operated, diaphragm valves which are controlled by an automatic time clock. From the sump, the sludge returns to the flash mixer along with the other chemicals.

The primary basins provide two and one-half hours of detention at the design rate of 10 mgd, and a weir-loading rate at the effluent end of the basins of 30,000 gallons per linear foot of weir per day.

The water is recarbonated in two stages to reduce the excessively high pH consumed by the lime-soda ash treatment. Carbon dioxide gas is produced in a burner located in the basement of the new chemical building. The gas is applied in a primary recarbonation basin ahead of the circular secondary basins, and the secondary recarbonation basin is located immediately behind these basins. A Walker Process Carball supplies the carbon dioxide at the rate of 3,720 pounds per day, using natural gas for fuel.

Experience with the water produced by the wells under its present system of operation has encouraged us to believe that the desired softening can be accomplished without going to a highly alkaline condition. Thus excessive recarbonation may not be necessary.

Fluoridation

After the water has been recarbonated, we apply sodium silicofluoride as a dental health measure. A Wallace & Tiernan loss-of-weight feeder makes the application.

The recarbonated water then goes to the four new rapid sand filters, located in a wing of the power-plant building immediately west of the existing filters. Each filter is designed for a capacity of 1½ mgd when operated at the rate of 3 gallons per square foot per minute. A higher rate of 4 gallons per square foot per minute has proved satisfactory when treating the well water, but the filters have been downrated in anticipation of the possible use of the river water. Hydraulically operated Pratt butterfly valves coupled with Simplex rate-of-flow controllers are used to govern the operation of the new filters. These valves are controlled from operating tables in the filter gallery.

The filtered water flows to a 4,000,000-gallon clear well. This, and the existing clear well, provides the plant with a total storage capacity of 4,000,000 gallons. Four centrifugal pumps deliver the water to the distribution system; three are electrically driven, and one is driven by a steam turbine. Two of the electric-motor driven units have a rated capacity of 5,000 gpm; the third is rated at half this capacity. The turbine-driven pump is rated at 7,000 gpm. Filter wash-water is pumped, by a separate unit, from the clear well to the wash-water tank, which is located in the upper stories of the filter building.

The water department, along with the municipal electric system, is under the jurisdiction of the City Utility Commission and direct supervision of the author. The rebuilding of the water-treatment plant was the responsibility of Black and Veatch, consulting engineers, of Kansas City, Mo.; Edward Farmer, of Black and Veatch, was the principal engineer in charge.

How Mayors Rank Their Most Urgent Problems

SEEKING a current picture of economic problems at the local level, Richardson Wood and Company of New York, consultants to cities on industrial development, recently sent a questionnaire to mayors of 900 cities in the 10,000 to 100,000 population bracket all over the U. S. and have analyzed the returns as follows:

More than 180 replies were received, a return of better than 20%.

To the first question—"Which of the following problems do you regard as of first-rank importance to your community now? (Please check one or more)"—the mayors answered as follows:

	Per Cent
More and steadier employment in factories	55
Preservation of downtown commercial property values	47
More facilities, such as water and sewage	41
More schools	32
More housing	17

Mayors of suburban towns and cities seldom selected factory employment as a major problem. In nonsuburban cities, therefore, factory employment is recognized as the all-important problem. Housing seems to be caught up, and schools fairly well caught up; but water, sewage, and other facilities are still needed by many. A number of mayors, in their comment, mentioned the need for more parking space. A few reported successful planning and zoning activity and a few more expressed a wish to undertake such activity. The worry about downtown values reflects a lack of planned parking space and an increase of shops and shopping centers on the outskirts. These draw away business from the old center that usually pays the biggest part of the local tax bill.

Attracting New Industries

The mayors on balance were against tax-supported efforts to attract new industries, as shown by their answers to this question:

"Do you think that your community, to attract new industry, should have a 'sales department' supported wholly or in part by local tax revenues, as is now permitted in Massachusetts?"

	Per Cent
No	47
Yes	21
Uncertain	20
No answer or comment	12

Many comments accompanied both the "yes" and "no" answers, indicating a wide difference of opinion on this topic. Those opposing the use of tax money for the purpose of attracting industry most often felt that getting industry was properly a private activity, that government should not be mixed with business. Those favoring the use of tax money frequently felt it was the only practical way to make sure of an effective activity. Many of these mayors were in New England, where the need for industry is great and where the plan is being given a trial.

Houston's Goal— First-Aid Training For Every City Employee

Mayor Roy Hofheinz presents an Instructor Course Completion Certificate to Sergeant L. V. Strebeck of the Police Department.

By ROY HOFHEINZ, *Mayor, Houston, Texas*

HOUSTON is well on the way to becoming a safer city—a city whose employees are better prepared to meet daily emergencies of accidental injury, and prepared as well for the grim possibility of mass injuries that might be caused by enemy attack or natural disasters.

It all started last year when city officials, civil defense planners and representatives of the Harris County Red Cross chapter got together to discuss training plans for civil defense needs. As a result of the conference, it was decided that one step should be to provide every employee with an opportunity to take first-aid training. The program was carefully planned, not only as a civil-defense effort but also as a tie-in to the city's safety program.

We, the city officials, well knew that enthusiasm for the program could be generated only if employees understood what this training could mean to them. Accordingly, a letter addressed to all employees and signed by myself and Civil Defense Director R. E. Smith, outlined the reasons why this first-aid training was important. The letter emphasized these four main points:

First—For Yourself:

You will have a confidence through knowledge and skills that you learn in First Aid that will be immediate, practical insurance in the event of an accident to yourself, a loved one or even a total stranger. You will know what to do and, equally important, what not to do in times of emergency. It can mean savings in time, money, and hardship.

Second—For the City of Houston:

First-aid training will develop safety consciousness which will mean fewer accidents and injuries both on the job and off the job. It will mean trained people, on hand, to render intelligent aid to city employees when an accident occurs. Lives could be saved.

Third—For Civil Defense:

It means a stable, disciplined person who will be less likely to panic when a major disaster occurs. A disaster may be enemy bombing, explosions, or natural disasters. It means that you can take care of yourself . . . help others and contribute to averting panic through having a job to do.

Fourth—For the Community:

Being a trained person you can save the lives of the citizens of Houston. Wherever accidents occur . . . you will know what to do. You have much to gain. We urge you to participate in this training. What you learn will always be useful to you.

The response was most encourag-

(Left) Instructor trainees of the Houston Police Department practice changing operators in the back-pressure-arm lift method of artificial respiration. (Right) Health Department and Public Utilities instructor-trainees splint a fractured knee.

ing. Employees seemed to realize that here was a training program that would mean something now and in the future.

Instructors Carefully Selected

To prepare for the training, 100 individuals were carefully selected from various departments to serve as instructors. Thus, the persons doing the teaching would be fellow employees, better able to understand the accident problems peculiar to the specific department. This plan also made it possible for class schedules to be set up more easily to fit into work schedules and still give every employee an opportunity to participate in a class during work hours.

Classes got under way early in December 1953, and by the time the heat of the summer arrived more than 50% of all city employees had completed the Red Cross standard first-aid course. No attempt was made to promote the training during the summer months, but in September efforts were renewed—and expanded—to encourage training not only for city employees but for more citizens of Houston.

A proclamation by my office named September 1954 "Red Cross First Aid Month" and urged every individual to take advantage of the free first-aid courses offered by the Red Cross.

While it is still early to measure the results of the city employee program, Mr. Smith has declared that the program "created a greater awareness and appreciation of the civil-defense effort. While this program was primarily for civil defense, it has made a distinct contribution to our everyday safety effort both on and off the job."

Frank Baldwin, director of Public Utilities, reporting that training for his department was 90% complete, said: "First-aid trained employees respond to our safety program more understandingly than the untrained." Other officials consider first-aid training the very foundation of the safety effort.

Two Dramatic Incidents

The training has already resulted in two dramatic life-saving incidents. Detective D. H. Fults of the police department was able to use his training to save the life of his four-year-old son, who suffered a fall and then went into convulsions, stopped breathing and began turning blue. Quickly applying artificial respiration, he was able to revive his son by the time the doctor arrived.

Another police department member, Sergeant E. M. Temple, was able to prevent bystanders from hurried action when he suffered a severe heart attack. Still conscious, though in severe pain, he instructed bystanders how to care for him. "I figure it saved my life," he says.

Nobody in Houston expects miracles. We know that accidents will continue to happen. But we also know that this program will help reduce the toll of accidental death and injury—first by helping to prevent accidents and second by providing a large group of persons trained to give emergency care to the injured. We know, too, that the city's employees are better prepared for civil-defense activity—and there has been a general increase of interest not only in civil defense, and in saftey, but in community activity as a whole.

Many cities throughout the nation have long included first aid as a part of their training programs — especially for police, firemen, and others having direct responsibilities in caring for the injured. But seldom has a large city attempted to provide the training for every employee.

The Ingredients

But any community can do it. It takes time, it takes effort, and it takes full cooperation and enthusiasm from many sources. But the results are well worth it, if even one life is saved that might otherwise be lost through tragic lack of knowledge and skill. A good place to start is with your local Red Cross chapter, where information is available on opportunities for first-aid training.

As Mayor of Houston, it has been a privilege to help in this important program—it is a worthwhile contribution to the City of Houston and its citizens.

Norfolk to Annex Large Territory

AT precisely midnight on December 31 the population of Norfolk (Va.) will jump from its present estimated size of 238,000 persons to a total of almost 300,000. Sounds impossible, but it's true, for at that hour Norfolk will carry out the second largest annexation in its history, when it absorbs over 11 square miles of land and about 60,000 new residents. Known as the Tanners Creek District, the land being annexed lies directly east of the present municipal boundaries.

The completion of the annexation on January 1 will mark the end of more than seven years of study, negotiations, and legal wrangling in Norfolk's efforts to annex additional territory. After receiving a recommendation from governmental expert, Thomas H. Reed, that annexation would benefit Norfolk, the City Council, in February 1949, gave the official go-ahead authorizing annexation. But for four years the city met legal barrier after legal barrier and saw the 41 square miles of territory that it originally wanted to absorb dwindle down to the present 11 square miles. Finally, in the summer of 1953, agreement was reached between city and county officials that cleared the track for Norfolk to proceed to annex the Tanners Creek area.

As a result of the annexation the city will benefit from the additional taxes that it will receive from the new properties brought within the municipal boundaries. On the other hand, residents will benefit from a greater range of services, such as better garbage collection and more police and fire protection. To inform new residents about city operations and to assure them that they will not be stepchildren of the city, a professional public relations firm has been hired and is at work preparing newspaper articles, radio programs, and newsletters to tell the city's program for the annexed territory. City officials in Norfolk believe that the public relations program will add measurably to the successful completion of the annexation on January 1.

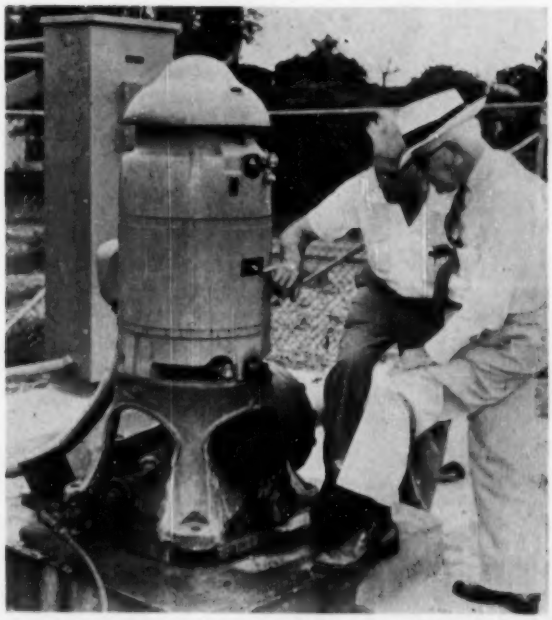
State Highway Officials Name New Executive Secretary

THE American Association of State Highway Officials announces that Alfred E. Johnson will become the Association's Executive Secretary on January 1, 1955, succeeding Hal H. Hale, who had resigned to accept a position with the Association of American Railroads. Mr. Johnson has been serving as Chief Engineer of the State Highway Department of the State of Arkansas, and during 1954 was President of the American Association of State Highway Officials.

Hugo, Okla., pulls through a desperate water-works crisis

The Well Had to Be Good

By JACK STAMPER, *Editor*
Hugo Dailey News
Hugo, Okla.



Mayor S. J. Sorum explains the functions of the 75-hp Jacuzzi pump to insurance man Joe Wolff, a member of the 20-man authority that underwrote the $20,000 water-well project when the city lacked sufficient funds to relieve the water shortage.

WHERE there is a will there is a way. This age-old axiom tells the story of how Hugo, Okla., a community of just under 6,000 inhabitants, rose above almost insurmountable financial obstacles to solve a critical water problem.

The city obtains its water supply from a battery of six wells. Early in June 1953, Hugo's No. 1 water producer began to sand in. When repeated efforts to repair the well failed, it became apparent that there was no alternative but to abandon the well and take positive steps to discover a new source of supply.

Rigid water-rationing controls were ordered by Mayor S. J. Sorum and his city council. Barely two weeks after rationing took effect, the city suffered a major fire that took out a half-block section of its main business district. Rationing enabled the city to keep a minimum reserve for fire fighting, but two other factors helped keep the city on the map: the fire hit in the wee hours of the morning when reserves were highest; and there was no wind to spread the flames.

This narrow escape sent city fathers scurrying to their crystal balls in a desperate effort to find some immediate solution. But the city's financial situation clouded the crystal. Like many American cities, Hugo had been caught in the trap of rising costs and operating expenses without a corresponding increase in revenues. The city was broke, had no reserve for coping with emergencies of this nature, and had no prospect of substantial additional revenue.

In Oklahoma, cities are supported by municipally-owned utilities, state auto license-tag tax, sewer and garbage tax, occupational tax, gasoline tax, etc. State laws do not permit a municipality to levy direct taxes. Hugo's only major source of income was its water department.

The problem of financing one or more good water-producing wells entered a two-month period of careful study. Legal snares narrowed the avenues of possible solution to the city's critical water supply emergency.

The answer was a water authority composed of 20 civic-minded individuals. This group agreed to underwrite a $20,000 gamble—estimated cost of completing a new well. A local bank agreed to lend the money. According to the plan, the city was to buy the well on a lease-purchase arrangement. A slight increase in water rates in the middle-use bracket was to furnish the necessary green stuff.

In the absence of up-to-date water-table information and with the help of limited geological data loaned by the oil companies, this group selected a site within the city and ordered a well driller to go to work. The tragic aspects of a dry or unsatisfactory hole were hardly considered. It *had* to be good.

Ample Supply of Water at 395 Feet

After four weeks and 395 feet, the driller, T. M. Haight, of Laverne, Okla., hit a real underground reservoir. Upon installation of a 75-hp Jacuzzi pump, the well tested out at 650 gallons per minute—almost three times the production capacity of any one of the other five wells.

Driller Haight used a 36-inch bore. A 14-inch casing was installed and perforated 250 feet with gravel packing from top to bottom. At the surface, concrete was poured to a depth of 15 feet in order to comply with state health department requirements.

The post mortem on the project includes these additional facts. The well's cost had been underestimated by $4,000. By some careful reapportionments the city was able to tighten its belt and absorb that figure. The increased revenue brought in the expected $1,000 added revenue and the indebtedness of the well project is being retired on schedule, with interest.

The shopping center that serves the Medina neighborhood has a sheltered walkway to protect shoppers from rain and sun. Advertising signs are controlled.

Children enjoy their recess at one of the new state schools built in the Medina neighborhood of Kwinana. Schools and shopping center have been planned to be within walking distance of all homes in the immediate neighborhood.

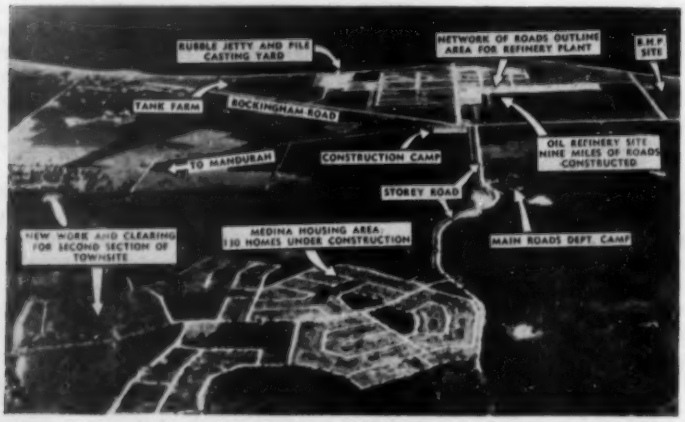
New City Being Built in Western Australia

THE first sections of an entirely new city are being completed on the west coast of Australia. Known as Kwinana, the new city is planned for an ultimate population of between 20,000 and 25,000 persons and will be the third largest in the State of Western Australia. Kwinana is the first pre-planned city to be built in Australia since the planning and partial development of Canberra, the Dominion capital.

The decision to build the new community was made by the State Government in 1952 to satisfy two needs. One was the anticipated need for homes for future workers at a multi-million-dollar oil refinery which the Anglo-Iranian Oil Company intended to build in Western Australia. The other was a need to offset the natural tendency toward an over-concentration of population in the existing cities of Western Australia.

To promote a decentralization new population growth, the Government encouraged the oil company to locate its proposed refinery adjacent to a broad and protected anchorage about 30 miles north of Perth, Western Australia's largest city. The new city is being constructed on land adjoining this site. Provision has been made in the plan to accommodate additional industries which the government believes will follow the establishment of the refinery.

Four residential neighborhoods, each to accommodate about 5,000 people, have been planned for the new city. The first of these neighborhoods to be constructed is Medina. Curved streets and walkways have been laid out to prevent fast through traffic. Schools, parks, and small shopping areas have been planned to be within easy walking distance of all the homes in the new neighborhood. Sites for apartments for elderly people have been set aside, so that old folks may have their own homes near their families.


RUBBLE JETTY AND PILE CASTING YARD
NETWORK OF ROADS OUTLINE AREA FOR REFINERY PLANT
B.H.P. SITE
TANK FARM
ROCKINGHAM ROAD
OIL REFINERY SITE NINE MILES OF ROADS CONSTRUCTED
TO MANDURAH
CONSTRUCTION CAMP
STOREY ROAD
NEW WORK AND CLEARING FOR SECOND SECTION OF TOWNSITE
MEDINA HOUSING AREA 130 HOMES UNDER CONSTRUCTION
MAIN ROADS DEPT. CAMP

An aerial view of the first sections of the new, and completely planned Australian city of Kwinana as it looked during early stages of construction.

The whole city looks better now that its central street has been improved.

Flood Waters on Main Street

St. George, Utah, solves an unusual self-improvement problem

By LYNNE EMPEY
City Coordinator
St. George, Utah

ST. GEORGE, a community of 4,600 in southwestern Utah, had one main, centrally located street that, until last year, the city had deliberately made no attempt to improve—and with good reason. This street was the natural route that flood waters had taken since the city was settled.

As the population increased, the community had shunned this 8½-block street as a housing site. Consequently, the area degenerated into a blighted band across the face of the town. However, in recent years, when new homes began to spring up on its border, city officials became aware of the need to provide this strip with its share of face lifting. The street varied from 63 feet to 97 feet in width.

To initiate the improvement program, Mayor Clinton Snow called a meeting of all property owners to discuss the needed improvement. City Engineer Ross Syphus prepared estimated costs on various types of construction and offered the following alternatives to the gathering:

1. Construction of a floodway by inverting the crown of the street so that the finished grade would be 1 foot low, with a gradual upward slope to either curb.

2. Construction of the street with an inverted crown to form a floodway, providing a 20-foot strip of gravel down the center where most of the water flows.

3. Construction of the street with an inverted crown to form a floodway, providing a 20-foot strip of asphalt surfacing that would be 2 inches thick on a gravel base down on the center of the street.

4. Construction of the street with an inverted crown to form a floodway by building a gravel base topped with 2 inches of asphalt surfacing for the entire width.

The fourth proposition met with almost unanimous approval by all property owners. In every case, concrete curb-and-gutter sections were required.

Cost of Project

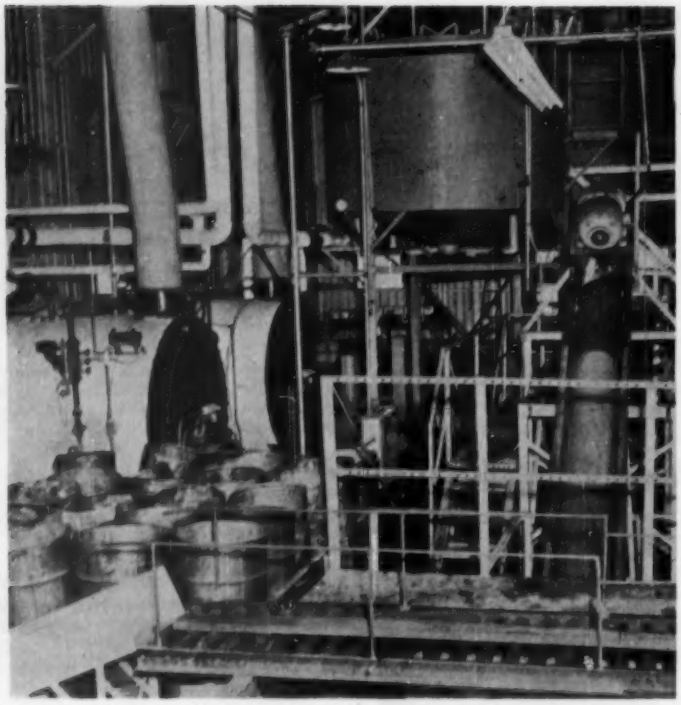
The complete project will cost about $42,000, of which about one-third will represent the cost of curb and gutters. Costs are being shared by the city and property owners.

The project includes the placing, at the end of the street, of 175 feet of culvert consisting of 18- and 36-inch Armco culvert pipe and head walls. The pipe is designed to carry approximately 76 second-feet of flood water.

Material used consisted of a 3-inch base of 1-inch maximum size of crushed gravel, sprinkled and compacted. The layer was then tack-coated with 3/10 gallon of MC-1 oil per square yard. Next, 2½ inches of mulch consisting of a mixture of ¾-inch maximum size gravel and 4.8% of MC-3 oil was spread and compacted with pneumatic and flat-iron rollers. After 60 days of curing, a seal coat of 1/10 gallon of RC-1 per square yard was applied.

A Woods mixer, pulled and powered by a Caterpillar D-8 tractor, was used to prepare the mulch. The laying was assigned to a Caterpillar No. 12 motor grader.

The street furnishes an approach to the new Latter Day Saints' Ward Chapel and Temple, the Dixie Sun Bowl, the municipal swimming pool, the city park, the athletic field, the municipal power plant, and the county hospital. To be able to use this street gainfully is our reward for the effort and expense required.



From receiving vats (foreground), garbage is conveyed to cookers (rear).

A Garbage Cooking Plant

Kansas City, Mo., designs a practical garbage cooker which produces feed that keeps hogs healthy

By HAYES A. RICHARDSON
Director of Welfare
Kansas, City, Mo.

Much of a city's health and happiness, even survival, depends largely upon its methods of refuse disposal. The ability to make this disposal an economic asset will have a profound effect on a city's well-being.

Kansas City collects approximately 55,000 tons of garbage per year, of which about 14,000 tons is commercial waste. This amounts to almost 45 tons of commercial garbage per day and about 130 to 135 tons of residential garbage.

Hog Diseases Traced to Garbage

The food value of commercial garbage is three to four times greater than that of residential garbage and, since it is usually collected daily and is received in good condition, it would seem logical that this excellent feed should be used for its most economic purpose—as feed for hogs. Unfortunately, during the past few years, an outbreak of disease curtailed the feeding of raw garbage to hogs. Prior to July 1953, all of Kansas City's garbage, with the exception of that collected from municipal institutions, was collected by a contractor who paid for it on a tonnage basis, the price varying with the price of hogs. The contractor had, until that time, used the raw garbage as feed for between 4,500 and 5,500 hogs.

The fall of 1952 marked the beginning of a severe epidemic of vesicular exanthema in herds of swine throughout the middle west, but only a slight outbreak of the disease in the contractor's herd. Whether the herd was infected by feeder animals that the contractor had purchased or by the feeding of raw garbage remains an unanswered question. In any event, the herd was destroyed in compliance with the orders of the state health authorities.

No raw garbage was fed to hogs after January 1, 1953. Instead, the contractor ground it and flushed the residue into the river. Meanwhile, a new contract was negotiated with the contractor on July 20, 1953, at a higher rate due to the fact that he no longer received a return from garbage feeding. Under the new contract, the contractor merely collected the garbage and turned it over to the city at a point known as 25th and State Line. The city immediately developed plans to utilize the commercial garbage, but to continue to grind and dispose of the residential garbage in the river.

The city decided to cook all of the commercial garbage. This decision offers an interesting story, the story of what can be accomplished by a municipal government operated by merit-system personnel.

State Legislation

A state law was passed, effective July 1, 1953, requiring that all feeders cook the garbage at a temperature of 212°, or until the ingredients are brought to a boil. The city had had some experience with a facility that had been built approximately 12 years before at the Municipal Farm. (See THE AMERICAN CITY, "Kansas City, Mo., Develops a Garbage-Cooking Program to Feed Its Hogs," July 1949, p. 98). This had been generally accepted as a basically sound operation and a pioneer garbage-cooking project. It cooked garbage and refuse obtained from the city market, municipal institutions, and a number of businesses, such as poultry houses that had been included because of special sanitary requirements. During the fiscal year May 1, 1953 to April 30, 1954, the Welfare Department collected 7,450

tons, much of which, however, had little or no food value when compared with hotel garbage.

During the vesicular exanthema epidemic, there were no cases of the disease at the Municipal Farm. The herd was inspected, sales were continuous, and top prices were received. In fact, the Municipal Farm received the first permit for an approved cooking plant granted in the State of Missouri. Until the new cooking plant, to be shortly described, was built, some of the commercial garbage received at 25th and State Line was brought to the Municipal Farm for cooking and returned to the hogs that had been moved to that collection district.

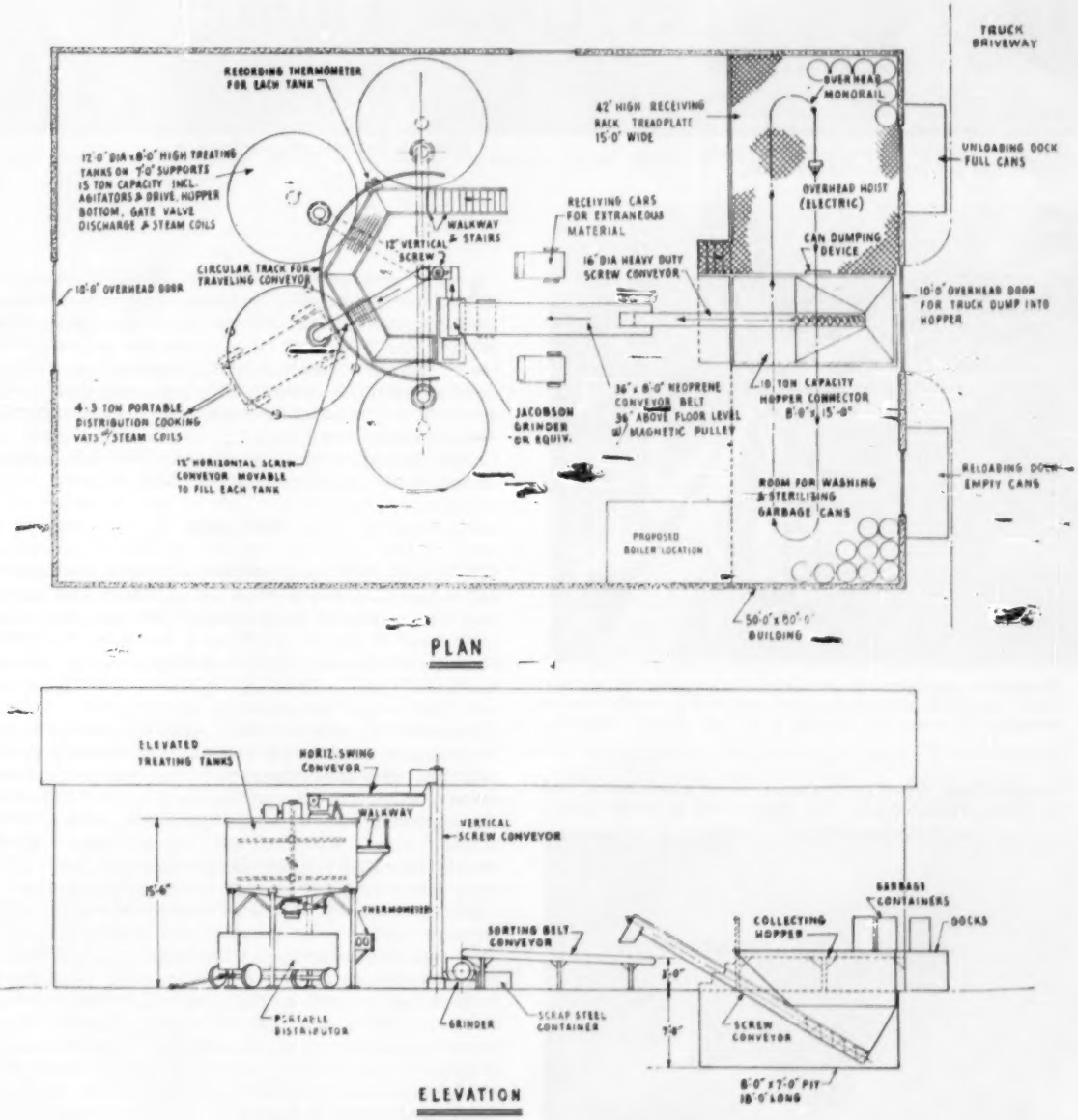
The Municipal Farm found cooking to be not only economically feasible, but more desirable for feeding than raw garbage. Under the new program, however, it was necessary that additional facilities for cooking be provided to handle the increased tonnage.

To make the program work, we had to keep enough breeding stock to supply enough pigs at all times to consume all of the commercial garbage. This meant the development of a herd of approximately 750 to 800 sows that would provide an average of 1.6 to 1.8 litters per sow per year with seven pigs per litter, or an average of more than 12 pigs per year.

Semiportable Plant

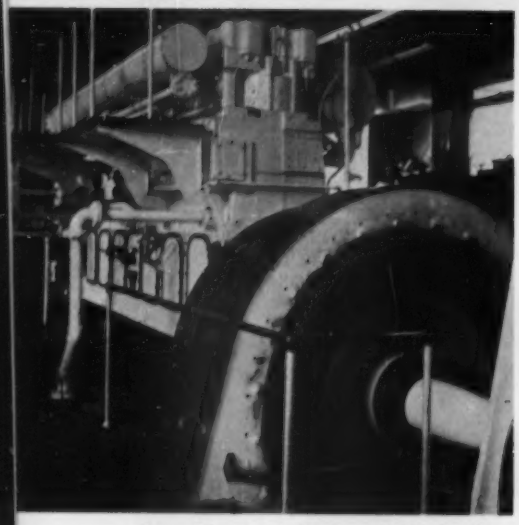
The new cooking plant developed at 25th and State Line is semiportable and may be moved to another location if necessary. It is located there because of the economy it offers of handling the commercial garbage immediately upon reception. From here, the cooked garbage can be moved directly to the hog lines

(Continued on page 145)


TRUCK DRIVEWAY
RECORDING THERMOMETER FOR EACH TANK
42' HIGH RECEIVING RACK TREADPLATE 15'-0" WIDE
OVERHEAD MONORAIL
UNLOADING DOCK FULL CANS
12'-0" DIA x 8'-0" HIGH TREATING TANKS ON 7'-0" SUPPORTS 15 TON CAPACITY INCL. AGITATORS & DRIVE, HOPPER BOTTOM, GATE VALVE DISCHARGE & STEAM COILS
WALKWAY & STAIRS
RECEIVING CARS FOR EXTRANEOUS MATERIAL
OVERHEAD HOIST (ELECTRIC)
CAN DUMPING DEVICE
12" VERTICAL SCREW
16" DIA HEAVY DUTY SCREW CONVEYOR
CIRCULAR TRACK FOR TRAVELING CONVEYOR
15'-0" OVERHEAD DOOR
10'-0" OVERHEAD DOOR FOR TRUCK DUMP INTO HOPPER
4-3 TON PORTABLE DISTRIBUTION COOKING VATS W/ STEAM COILS
36" x 8'-0" NEOPRENE CONVEYOR BELT 36" ABOVE FLOOR LEVEL W/ MAGNETIC PULLEY
10 TON CAPACITY HOPPER CONNECTOR 8'-0" x 15'-0"
JACOBSON GRINDER OR EQUIV.
15" HORIZONTAL SCREW CONVEYOR MOVABLE TO FILL EACH TANK
RELOADING DOCK EMPTY CANS
ROOM FOR WASHING & STERILIZING GARBAGE CANS
PROPOSED BOILER LOCATION
50'-0" x 80'-0" BUILDING
PLAN
ELEVATED TREATING TANKS
HORIZ. SWING CONVEYOR
WALKWAY
VERTICAL SCREW CONVEYOR
15'-6"
THERMOMETER
SORTING BELT CONVEYOR
GARBAGE CONTAINERS
COLLECTING HOPPER
DOCKS
3'-0"
7'-0"
PORTABLE DISTRIBUTOR
GRINDER
SCRAP STEEL CONTAINER
SCREW CONVEYOR
8'-0" x 7'-0" PIT 18'-0" LONG
ELEVATION

A plan showing the layout of the Kansas City garbage cooker.

SEWARD, VALDEZ, and CORDOVA, ALASKA



Seward has worked extremely hard to keep its municipal electric plant equipped to meet its ever-increasing power demand. This new 1,200-hp Cooper-Bessemer diesel engine was put into service this year.

By WILLIAM S. FOSTER
Engineering Editor
THE AMERICAN CITY

Three Small Alaska Cities Ready Themselves for A Great Future

Alaska Series—Conclusion

Wood-stave standpipes dominate Alaska water-supply systems. These two tanks store water from a glacial mountain stream, bringing the water in through a 12-inch Transite pipeline.

Seward's Main Street gains a more useful cross section with the city's Allis-Chalmers HD6 tractor and front-end loader.

ALONG the southern coast of Alaska proper, west of the panhandle, lie three small cities—Seward, Cordova, and Valdez. All are rich with untapped resources that few other cities in the entire country can match; all have populations ranging between 1,500 and 3,000 persons. Yet Seward has a professional city manager with a commendable record of managership; Cordova recently voted to adopt the manager plan; and Valdez, though without a city manager, has initiated an aggressive municipal development program.

SEWARD

SEWARD, with a population of 3,000, manifests a strong growth potential. Of significance is the fact that the citizens of Seward own 1,500 cars and trucks.

Manager of the city's affairs is Raymond F. O'Hara, formerly of Delano, Calif. The program he has initiated for future construction is a broad one. During the current fiscal year, he expects the city to complete a new $1,000,000 high school. Next year, he anticipates the beginning of an $800,000 hospital, a systematic paving program, and improvements to the city's small-boat harbor. Other projects, in the more distant future, include a community building, lights and other facilities at the airport, additional generating capacity at the electric plant, a hydroelectric development, and a more comprehensive water storage and treatment plant.

The city recently completed a new sewer system, and a water system which uses Johns-Manville Transite pipe and copper services. The water system taps a glacial mountain stream and is troubled occasionally by turbidity, a problem which the city expects to correct with the installation of filters. Another recent improvement, completed this summer, is the regrading of Seward's main street, widening out the high, awkward crown and bringing it to a convenient cross section that will permit paving in the future program.

Seward operates its own electric plant, using a new

Valdez, in a Swiss-like setting, has, in its moderate climate, fine water supply, and port facilities, good reason for growth.

Cooper-Bessemer diesel engine for the main source of power. The city started the plant in 1937 with the help of an RFC loan, installing three Worthington diesels with a 300-kw output. In 1947, the plant was enlarged by the installation of a new Fairbanks-Morse 300-kw unit and, in 1950, an 800-kw Cooper-Bessemer was added. This year, the big 1,200-kw Cooper-Bessemer went into service. The planned hydroelectric development should provide the city with 1,500 hp of power.

The rapid growth of the electric plant is reflected by the location of the equipment. The Fairbanks-Morse engine has its silencer in the building. Three other engines have Maxim silencers mounted in pits outside the building. But the new Cooper-Bessemer engine has its silencer mounted outside the building in the conventional manner.

In the past, the engines used a diesel fuel known as Alaskan Standard, apparently designed for what many believed were typical Alaskan weather conditions. However, the relatively moderate climate in Seward, though it produces 69 inches of rainfall a year, rarely drops below zero, and has made it possible for the plant to use regular diesel fuel that gives a greater power output, is easier on the engines, and does not require preheating.

The plant uses General-Electric switchgear. It has a Trane oil cooler for the big Cooper-Bessemer, and a 20,000-gallon water tank that acts as a cooling tower.

Snow removal in Seward is a problem. Practice is to blade the snow to the center of the street, load it into trucks with an Allis-Chalmers HD6 crawler tractor and snow bucket, and also with a Scoopmobile loader. In addition, the city owns two Caterpillar graders, one Caterpillar D4 and one Caterpillar D6 tractor, and three dump trucks.

Seward maintains a competent fire department consisting of one paid fire chief and 25 volunteers. Like other volunteer groups throughout the country, this one takes a strong interest in the civic progress of Seward, and not long ago its members played an important role in rebuilding the city hall.

For fire fighting in the downtown district, the city has built a limited amount of salt-water fire mains, thus reducing the demand on the public water supply. The fire department trucks are equipped with the fog-type Elkhart Brass Mystery Nozzle.

The Seward police force consists of the chief, a captain, two patrolmen, and one jailer. The department owns one radio-equipped Ford police car; and City Manager O'Hara has on his agenda the purchase of a panel truck for the department.

VALDEZ

VALDEZ is a shipping center, the base of the most direct route to the interior of Alaska that lies entirely within the bounds of the territory. The city

Seward houses its water and electric department in this building.

Three leaders in Alaska's municipal progress include: (left) City Manager Raymond O'Hara who developed plans for Seward's growth; (center) Valdez' City Councilman Max Wells who has played an important role in the development of water, sewer, and port facilities, and has many ideas for the city's progress; (right) Cordova's mayor, Dr. Will Chase, a famous Alaskan physician, who holds the key to his city's future in his hands—copper ore in his right, coal in his left.

has no rail facilities, but must rely on trucks for its shipping. Its ice-free port has just begun to be put to use the year-round, for until 1950 trucks could operate only during the summer months on the Richardson Highway that leads to Valdez. During 1950, territorial highway maintenance crews kept Thompson Pass (the summit) on the Richardson Highway open all winter, permitting traffic on the highway throughout the year. Shipping has expanded and prospered in Valdez ever since.

Also prior to 1950, the town had no public utilities at all. In 1952, the municipality built a sewer system and, at present, is building a public water system. The water works will include service to the two town docks and will provide fire protection not only for the town itself, but for the docks as well. Also planned is a new high school and, in the near future, 30 blocks of paved streets. Property taxes, plus a 2% sales tax that brings in revenue of $30,000 to $40,000 annually provide for the city's financing.

Valdez has become a truckers' shipping center of importance due to its port facilities and improved highway connections.

Valdez' main municipal problem in the wintertime is snow removal. The area has an average annual snowfall of 226 inches which, last year, jumped to 282 inches. It had been the town's practice to plow the snow off the streets into vacant lots, but the flurry of building in the town has diminished the number of lots available for this purpose. City Councilman Max Wells expects that the town will be compelled to purchase heavy equipment, such as a pan-type scraper and heavy tractor, to clear the streets.

The town boasts a new 4,400-foot airport and is served regularly with mail and passengers on a daily schedule by a commercial airline.

CORDOVA

OF the three, Cordova appears to be the least tumultuous, yet promises the greatest growth potential. Its long-time mayor, Dr. Will Chase, author and physician, has records of rich mineral deposits in the area that include tungsten, tin, lead, and antimony, in addition to copper and coal, that promise to become accessible when the proposed Copper River highway is completed.

Cordova, at present, is a fishing community with seasonally active salmon canneries. At one time, it was the port city of the Copper River Railroad and served the rich Kennecott mineral holdings. However, the development became too expensive to operate prior to World War II and has been abandoned temporarily. The resources still are there, however, and the replacement of the railroad with a highway should make this activity again economically attractive.

Cordova operates its own water, sewer, and electric utilities, and currently plans a new school building, a

project of the Alaska Public Works program. It enjoys moderate climate, with the temperature rarely falling below 0° F.

Conclusions

For these cities, the most pressing need is better street surfacing, and their planning confirms an awareness of this need. It is also essential that they update their water utilities. However, this situation is not critical because the cities are relatively small. Nevertheless, the practice of permitting water to flow continuously from the taps during cold weather is an improvization that good engineering will correct. The full circulating system, developed in Fairbanks (See THE AMERICAN CITY, December 1954, p. 80), offers a commendable way of overcoming the danger of frozen lines.

A properly protected system would enable the cities to put their water works on a businesslike basis, using water meters to measure the quantities used. As the need for increased water treatment and pumping grows, each city will see the money-saving value of meters.

Improved fire protection can probably be achieved by the enactment of more effective building codes. At present, these little cities are emerging from the status of wood-frame constructed villages and a building code that would incorporate provisions for adequate fire protection is vital. Cordova's mayor, Dr. Will Chase, tells of suffering the loss of an irreplaceable collection of Alaskan and polar museum pieces when the building adjoining the museum caught fire. And only recently, Seward's only newspaper office was destroyed by a fire that gutted its wood-frame building.

Water storage, also, is slated for improvement. The Alaskan cities have yet to be sold on the use of steel, elevated, storage tanks; even though the weather, particularly in the coastal area, is disarmingly moderate. Wood-stave tanks, with their many points of potential deterioration, are widely used and undoubtedly will be replaced when the need for a more permanent type of storage makes itself felt.

It is difficult to anticipate the time when sewage treatment will be required in these coastal Alaskan cities. Many refer to the Japan Current that evidently sweeps along this area and has been credited with the mild temperature of the region. Nevertheless, the water is cold—too cold for recreational swimming, and the tides are vigorous, averaging well over 34 feet. It would appear that these cities would have to grow considerably before their sewage would pose a pollution threat, but carefully built outfall sewers that reach below the water surface at low tide and are strong enough to resist the violent action of the tides undoubtedly will be needed in the future.

Given half a chance to allow the mineral, timber, and transportation resources of these areas to develop, the cities of Seward, Valdez, and Cordova, should make a municipal mark that will merit re-examination.

A Quick-Way shovel backhoes into the ground to lay new water mains in Seward, one phase of a comprehensive program.

Easy Does It With Chlorine

A FEW years ago, W. Van Brocklin, superintendent of water, at Gloversville, N. Y., began experiencing all sorts of trouble with his filters. Efficiencies dropped so badly that instead of filter "runs," they had deteriorated to a classification of a slow walk or crawl. Instead of 70 to 80 hours of operation between washings, he now had to be content with as little as 20. Sometimes, he felt that he was using as much water for backwashing as he was delivering to the clear well.

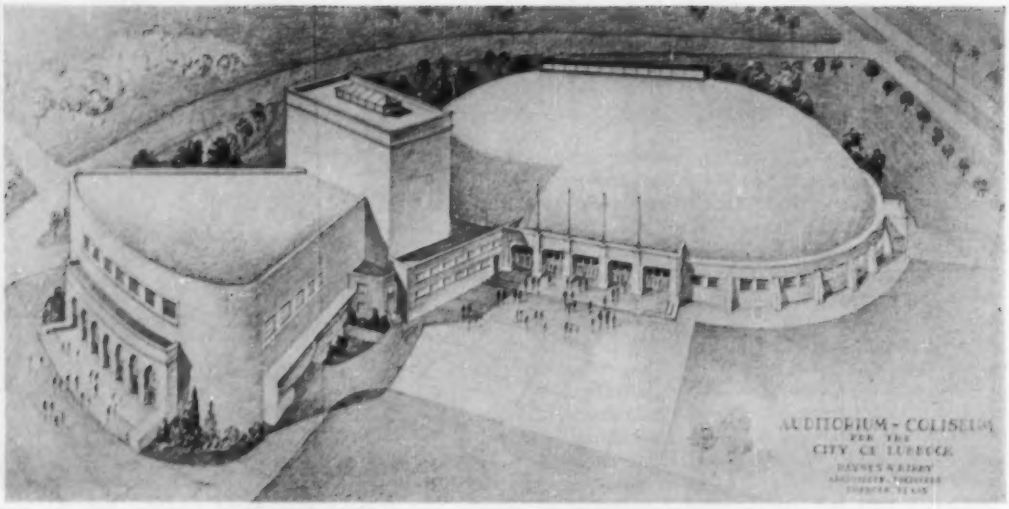
The filters themselves didn't look good either. The sand became covered with slime and lost its yellow color; mud balls started to form; and the sand commenced to pull away from the sides of the filters. Whenever Mr. Van Brocklin would backwash the filters, the sand would break into large chunks that had to be raked in order to be put back into useable condition.

First he tried caustic treatment. That helped to relieve the problem to a small extent. But the 2% caustic solution didn't provide the permanent improvement that was needed for this plant. So Superintendent Van Brocklin switched to heavy doses of chlorine on top of the filters. Unfortunately, the chlorine produced such offensive odors that he decided on a more discreet attack.

Therefore, he sharply cut back the dosages of chlorine on the filters to just a mere trace; and, throughout the next few weeks, he gradually increased the applications until they finally approached 0.1 ppm.

Filter runs improved immediately, and the taste of the filtered water remained good. The sand began to regain its healthy yellow color; the sides of the filter began to clean themselves; and the mud balls gradually disappeared. Furthermore, the filter runs increased from 20 to 72 hours.

The Gloversville plant has two Wallace & Tiernan chlorinators. However, under the present program, it needs only one to apply chlorine to both filters. The plant is rated at 6,000,000 gallons daily.



An architect's sketch of the new municipal auditorium-coliseum being constructed in Lubbock, Texas. The fan-shaped building at the left is the auditorium; the oval structure is the coliseum.

Auditorium-Coliseum Underway in Lubbock, Texas

By STEVEN J. MATHEWS
City Manager
Lubbock, Texas

By locating the auditorium and coliseum near the Texas Tech stadium, the city benefits from the lighted 2,000 car parking lot.

THE City of Lubbock, Texas, is constructing a $2,100,000 auditorium-coliseum to serve the recreational and cultural needs of its 105,000 people.

Located on a site adjacent to the Texas Technological College, the new building consists of two connected structures, a fan-shaped auditorium seating over 3,000 persons, and an oval-shaped coliseum providing 7,500 permanent seats and space for 2,500 additional seats on the arena floor. Of reinforced concrete, steel, and brick and tile construction, the new building will harmonize with the existing structures on the adjoining college campus.

The story of the auditorium-coliseum project began shortly after the close of World War II when in December 1945 the voters of Lubbock approved a bond issue for the construction of the building. A site in downtown Lubbock was recommended by a committee of local citizens who had visited auditorium projects in 18 southwestern cities. However, site purchase and construction were postponed by successively rising real estate and building costs and, in 1950, the Korean War caused further delay for the auditorium-coliseum.

Finally, in late 1952, the project was reconsidered and after several months of work the present site was decided upon. A seven-acre tract for the building was deeded to Lubbock by the Texas State Legislature. Actual construction began in August with completion scheduled for 1956.

A lighted parking area designed to accommodate approximately 2,000 cars is being built in conjunction with the auditorium and coliseum. This parking area will also serve the Texas Tech stadium during football games.

Simple Filing System For City Managers

B. H. Cruce

By B. H. CRUCE
City Manager
Greeley, Colo.

WHEN I came to Greeley, Colo., all materials except some correspondence of a general nature were being filed under a subject file. The subject file, however, had little uniformity about it. The printed materials would be placed in one folder and correspondence on the same subject would be filed in other folders. Many subjects were duplicated but with different file numbers, and no effort had been made to classify the materials into master subjects or sub-subjects. For instance, the filed materials and correspondence regarding salt for street use might be under 5 to 10 different subject numbers.

It was because of this confusion that I, as a new city manager at Greeley, decided that the whole filing system should be remade. And it was at this point that we subdivided into 10 master subjects everything in the files. They are as follows:

1. General
2. Personnel
3. Contracts
4. Ordinances
5. Improvement Districts' (Petitions and Correspondence)
6. Council Resolutions and Proclamations
7. Reports (Financial and Statistical)
8. Planning Commission (Petitions and Correspondence)
9. Historical (Greeley and Weld County)
10. Ditto Masters.

Under each of the master subjects are the 800 or more sub-subjects. Each folder in the file is labeled with a sub-subject and given a number. The number of the master breakdown precedes the number of the sub-subject, for example, 1.81 refers first to the master subject division, *General*, and then to the sub-subject—which in this case is *Fluoridation—Chemicals*.

At least two visible index strips are made out for each sub-subject. The first strip is the title of the sub-subject and the second strip refers to the sender of the material. The several suppliers of fluoridation chemicals are each indexed, but they all have the same number and their correspondence and advertising matter on the subject is filed in the same folder.

Folders were also made for *Fluoridation—Reports*, 1.82, and *Fluoridation—Equipment*, 1.83. Materials are filed in these folders and indexed in the same way as for folder No. 1.81. Sub-subjects range from Asphalt to Zoning.

Often a letter, pamphlet, or other material, will contain two or more subjects. In these cases, the materials or letters are filed under what is considered the main subject matter and a cross reference sheet placed in the folder containing the material for the other subject or subjects.

It is the city manager who calls for materials from the files; therefore, either he, or someone with knowledge of his needs and the city's operations, should take time and assume the responsibility to see that material is properly labeled before going to the files. This is absolutely necessary if the city manager expects to receive the materials from the files without loss of time.

At present, when I read a letter or pamphlet, I underline or check a subject referred to in the material under which I wish the material filed. My secretary checks the visible index closely to see if we have a folder label already in the file on this subject. If not, a folder is made up with the proper visible index strips. If, however, the secretary finds we have a folder labeled very similar to the subject I suggested, the secretary checks with me before filing the material. Sometimes this saves additional folders being added to the files.

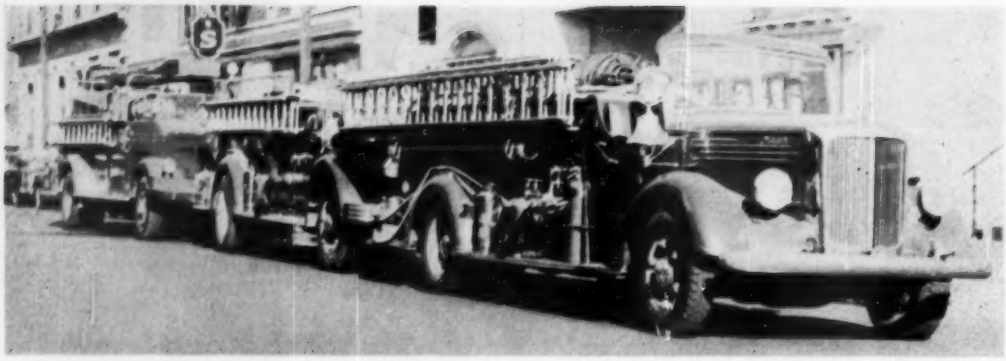
The secretary uses her own judgment as to cross references, keeping in mind that her efficiency is always judged by the speed in which she can select materials called for from the files. For this reason, she always makes a cross reference if there is the slightest reference to another subject or chance that it might be confused with a similar subject.

Nowadays it makes no difference whether I call for a contract, an ordinance, a report, or a letter from the "Whosit" Equipment Company regarding that *Loader* that we are interested in. The secretary smiles and says, "I'll bring it to you in just a moment"—and sure enough, before you can say, "Check file 13, please," she is placing the material requested on my desk before me.

CITY size and diversity of functions handled by a city manager determine the scope of a subject classification. Because no two are alike in specific detail, files must be tailor-made to fit exactly the material created and received by each office. Applicability, therefore, of these 10 major subjects to all city managers' files necessarily requires analysis.

Moreover, many city managers' files do not require a decimal numbering scheme such as that used in Greeley, Colo. Instead, a simple alphabetical arrangement of subjects often suffices, as reference is more direct to subject captions than to numbers, which are often difficult to remember for reference purposes.

Charge-out and follow-up of borrowed papers as well as disposition of material which has outlived its usefulness are also vital factors in subject filing which, while not treated, are presumably provided for in this very practical installation.—JAMES T. O'CONNELL, Remington Rand Inc., New York 10, N. Y.



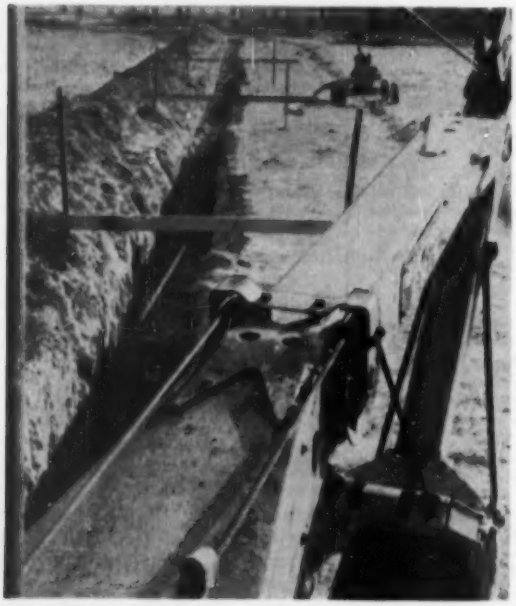
Dunn's three fire trucks line up; each represents many years of service.

Engineering and Public Safety Progress

By A. B. UZZLE, Jr.,
City Manager
Dunn, N. C.

SEWER AND WATER EXTENSIONS

IN September 1953, 116 houses, sheltering 7% of the 7,000 citizens of Dunn, N. C., still had not been connected to the city sewer system but relied on outdoor privies. All were in violation of the city ordinance requiring any house within 200 feet of city water and sewer mains to be connected to the city's sewer line.



The sanitary-sewer program required firmness by the city council to eliminate outmoded, unsanitary installations.

At present, after a firm stand by the city council, these buildings are being connected at the rate of 14½ houses per month. Property owners are actively cooperating so that no court action has yet been required. The city has already installed 6,300 feet of 6-inch water main and 6,100 feet of 8-inch sewer. Property owners must furnish all materials for these installations and the town furnishes labor and equipment. The expenses are distributed 40% for the town and 60% for the property owners.

Virtually all water mains are cast iron, supplied by the Lynchburg Foundry Company, using bell-and-spigot joints. Next year, we plan to try some mechanical-joint pipe, although the bell and spigots have given us no particular trouble. We standardize on Mueller fire hydrants and always place a gate valve on new hydrant installations, as well as on replacements of old hydrants.

We are also providing public rest-room facilities in the downtown area with the cooperation of merchants and firms dealing with plumbing supplies. City workers do the actual building, and the city hall attendant is held responsible for the cleanliness of these rest rooms.

POLICE PROTECTION

FOR the nominal price of $6.48 per person, Dunn's residents get the benefit of good law and order enforcement. During the past year, Chief Alton A. Cobb and his force of 12 policemen have efficiently served the city on an annual budget of $45,367. The major problem concerning the department is intoxication, the chief reason for arrests. Intoxication, we have found, has a direct effect on juvenile delinquency, a problem of increasing concern in this area. Both County Judge Robert Morgan and Chief Cobb agree that the causes of most cases of delinquent youngsters can be traced to the home, generally to parents who drink.

To facilitate its efficient operation, our police depart-

ment uses a Motorola two-way radio, operating on 155.55 mc. The base unit is located at police headquarters where it communicates with two mobile units. The Sheriff's force also uses radio facilities arranged so that the city police can maintain communications with the six county patrol cars and the Sheriff's headquarters. Similarly, the police maintain communications with the State Highway Patrol at Raleigh.

We have recently replaced our old parking meters with the new Rhodes Mark-Time meters with the Hurricane head. Fifteen of the meters, providing 12 minutes of parking for one cent, have been placed at our banks and the post office. Eighteen of the two-hour meters presently serve the less congested part of the business district, and 224 of the one-hour meters are located in the remainder of the business district.

About two years ago, the North Carolina Supreme Court held that the multiple-coin parking meters violated the state constitution since they permitted a time limit within a time limit. Since installing the single-coin, single-time heads, however, revenue has increased, and violations have practically vanished. We plan to employ a policewoman shortly who will devote her time exclusively to parking-meter enforcement.

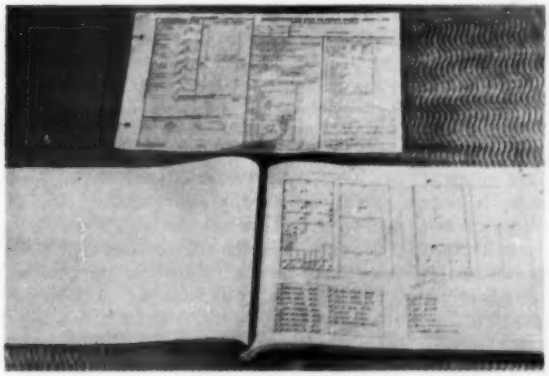
STREET FACE-LIFTING

OUR CITY originally was laid out by Atlantic Coast Line railroad engineers in a rectangular pattern. They provided us with blocks 300 feet square and streets from 66 to 70 feet wide. Except for an area of two blocks square in the center of the business area, only 30-foot widths were left between curbs for use by vehicles. This narrow roadway strangled traffic and forced us to restrict parking to one side of the street only.

Consequently, the city council instructed its Public Works Department to widen these roadways. The department, employing regular street-maintenance equipment, enlarged the street-curb radius from 7 to 20 feet and supplied concrete curbs and gutters.

The crews used steel curb-and-gutter forms made by the Metal Forms Corporation of Milwaukee. On all new curb-and-gutter work, 20 feet served as the standard corner radius. For this job, the city purchased 40 feet of flexible radius forms and 200 feet of the straight forms. The men graded the street using a Galion 104 tandem-drive motor grader and a Hough tractor shovel. This work resulted in roadways that are 43 feet or more in width.

The project was accomplished without injury to any of the large shade trees along the street. Credit for the improvement goes to J. A. Bass, superintendent of public works, and his assistant, Irving Porter.



A new tax map records all real property within Dunn limits.

OUT-OF-CITY FIRE POLICY

THE chief of our volunteer fire department is Ralph E. Hanna, mayor of Dunn. Besides Lieutenant John E. Norris, our only full-time paid fireman, we have 19 volunteer and auxiliary firemen. A siren on the city hall announces all alarms, and Chief Hanna insists that the first truck roll 1½ to 2 minutes later, night or day.

Apparatus consists of one FWD and two 750-gpm triple-combination Mack trucks, each supplied with a Hardie high-pressure fog nozzle. The two Mack trucks also can use the all-purpose Elkhart nozzles that produce either a fog or a stream; the FWD is supplied with an Akron Brass all-purpose nozzle. One of the trucks is equipped with a high-pressure pump and nozzle made by the F. E. Myers and Brothers Company, of Ashland, Ohio. The department uses Eureka double-jacket hose made by the U. S. Rubber Company.

For the protection of the men we have eight MSA gas masks, two oxygen units, good for 60 minutes of continuous use, and one Scott Air-Pak.

Volunteers are paid for each fire at the rate of $3 if water is used, $2 if not, and $1 for false alarms. Responding to out-of-town calls is a moral responsibility, and in no way a legal obligation. We impose a minimum charge of $100 for every such call. Since the city does not pay firemen until it has collected this fee, and since the firemen are not required to answer outside calls, lists are carefully checked for unpaid bills. Such people do not get further fire protection from the town unless the volunteers decide to take a chance on getting their money.

The city's budget for the fire department for the last fiscal year was $20,415.52, or $2.91 per person per year. The number of fire calls answered in 1953 was 66. A breakdown of the calls reveals 17 outside calls, 28 residential fires, 8 mercantile fires, 6 grass fires, and 7 auto fires.

NEW TAX MAP

FOUR months of work and a cash outlay of $1,100 has provided Dunn with a complete tax map of all real property in town. The maps have been blueprinted and bound in a 150-page book which is available for $25.

The map represents the work of two men in our Water and Sewer Department, who completed it during slack seasons. These men, Marshall Hyatt and Kenneth West, measured every lot and recorded it beside the owner's name. They then drew the maps on 11-inch by 17-inch tracing paper, placing two blocks on a sheet in most cases. Fifty feet to the inch was the scale used most often. They also prepared an index sheet on a scale of 400 feet to the inch for each of the city's four wards.

All sheets of the tax listing were turned over to John E. Norris, who doubles as building inspector. He checked every piece of property against the tax-listing sheets, and found a number of unclaimed lots which will now be sold at auction.

This project assures us that all property in town is recorded on the tax list and that the town is getting its return on them. We believe that this is one of the most worthwhile jobs that has been done in our city.

When Considering A Municipal Annexation Program

By JOHN GILLESPIE, *Research Associate, Institute of Public Affairs, The University of Texas, Austin, Texas*

WHEN an annexation program is under consideration in any city, municipal officials will wish to be alert to all possible antipathies that may result.

Many of these problems will be obvious. For example, there are the problems of (a) the increased area that must be furnished police and fire protection; (b) property to be placed on the tax rolls; (c) new garbage cans that need to be emptied. However, there are often incidental changes—some significant and some inconsequential—which will result from an annexation program. In order for the program to go smoothly, these must must be anticipated, recognized, and met.

Some of the incidental effects of an annexation program that are often overlooked can be used in "selling" the annexation program to people in areas to be absorbed; others have to be considered by city administrators as they affect functions of government. The following are some points that should be taken into consideration by city administrators when an annexation program is proposed:

I

Watch the population bracket laws. Many states have special legislation regulating cities in the form of population classification statutes. A sudden increase in population resulting from an annexation program may throw the city into a different series of population bracket laws. Such laws will often require an increase in salaries of officials, changes in the work hours of public employees, the creation of new offices, and the assumption of new services or functions.

Even the county government may be affected in a significant way by a population change of a city, for in some states the counties are classified by the size of the population of cities within the counties' boundaries. Both city and the county should be prepared to meet the necessary governmental changes that may result from an annexation program.

II

Collection timetables for garbage and trash may have to be changed. If the newly acquired city area is large or densely settled, it may require that the present routes and schedules be completely readjusted in order to service the additional territory. A change in collection schedules creates a problem of getting the information to the affected residents and may necessitate increases in both personnel and equipment.

III

Street names may have to be changed. Occasionally, annexed areas will contain streets which have the same name as streets in the old area of the city but which are not a continuation of the city street. This will make a change in street names necessary, which often meets opposition by householders.

IV

Change of utility rates may result. If an area had been serviced by city-owned utilities before annexation, in all probability the nonresident consumers were charged a higher out-of-city rate. As soon as utility customers become city residents through an annexation, their rates will change.

Knowledge of the resultant saving the consumer gets from a change in utility rates may offset ill will created by an increase that the new resident will usually get in his property tax bill.

Not only will the new resident save on utilities owned by the city but he may gain through a change in rates of privately owned utilities. For example, when Austin, Texas, annexed 13 square miles of territory and absorbed 17,000 persons in 1951, residents in the annexed area had their water rates reduced one-third by the city and their telephone rates were changed from the higher "rural" rates to the lower regular city rates.

V

Annexation may affect other governmental units. In some cases, extension of city boundaries will also extend school district boundaries and cause a reshuffle of students. A recent program in one Texas city annexed some of the territory and the schoolhouses of three adjacent school districts. The remaining parts of the dismembered school districts were so weak financially after the city took over the parts of the school districts which contained the highest property valuation that they ceased to exist as governmental units.

It is possible that a proposed annexation program will provide for the assimilation of only a part of an adjacent special district, whereas it might be more feasible to increase the scope of the program and take in the whole district.

An annexation plan of one Texas city provided for taking in only a part of a special water district. Texas law requires that if a city annexes the whole district it must assume the obligations of the district and the district ceases to exist; whereas, if only a part of a district is annexed, the unit continues its existence. Residents in the part of the special district to be annexed were vociferous opponents of the annexation program for they insisted that the city take in the complete district and assume all the financial obligations.

VI

City may move into a different insurance rate classification. An annexation program may affect in different ways the fire insurance premium rates on property in the city and in the annexed area. The rates in the annexed area will probably be reduced, for city rates are lower than rural rates. On the other hand, the annexation may spread the city fire protection facilities thin and throw the city into a higher insurance rate classification. This will cause property owners to pay increased fire insurance premiums. Before the city boundaries are extended, a study should be made to evaluate any change in fire insurance deficiency points which may result.

VII

Industrial sites may lose their appeal. On the periphery of many cities, industrial sites have been developed where businesses can enjoy low rent or low taxes. The attractiveness of such sites may be lessened after annexation. Efforts to induce industries to locate there will be impeded if there is an increase in property taxes.

VIII

Other ramifications. In each state the ramifications of an annexation program will differ widely. Many diverse situations will develop and often they will be unanticipated if careful planning is absent. Texas has a poll-tax requirement for voting, but persons over 60 years of age are exempt from the poll-tax payment. However, if a person over 60 lives in a city of 10,000 population or more, he must obtain a poll-tax exemption certificate. Thus annexation by Texas cities will often cause a change in a person's eligibility to vote in an election.

The ramifications of an annexation program can spread out in many directions and affect many people in unexpected ways. City officials need to be far sighted when an annexation program is to be used to solve some of their city's problems.

De-Iced Hangar Doors

The heater in the background keeps the airport hangar doors from becoming frozen during winter frosts at Worcester, Mass.

Worcester, Mass., municipal airport keeps hanger doors from freezing

A PAIR of electric water heaters, like those used in homes, permits hangar doors to be easily opened and closed throughout the winter at the Worcester, Mass., municipal airport.

The electric units, manufactured by the Edwin L. Wiegand Company, of Pittsburgh, Pa., afford a substantial saving over oil burners and eliminate the potential fire hazard that oil storage presents. During the last heating season, from December 1953 to March 1954, the heaters and circulating pumps used less than 10,000 kwhrs at a cost of about $190.

Roll-Away Door Sections

This hangar has 120-foot-wide doors at each end. Each door is divided into ten 12-foot-wide sections mounted on wheels that ride on rails set into the concrete floor. At each doorway, five sections are rolled from the center to each side of the hangar to provide complete opening of the entire end of the hangar.

Since the hangar itself is not heated, the heating systems for the door sills had to be self-contained. A study of heating requirements for the door systems disclosed a need for 40,000 BTU's per hour for each of the four sections of doors.

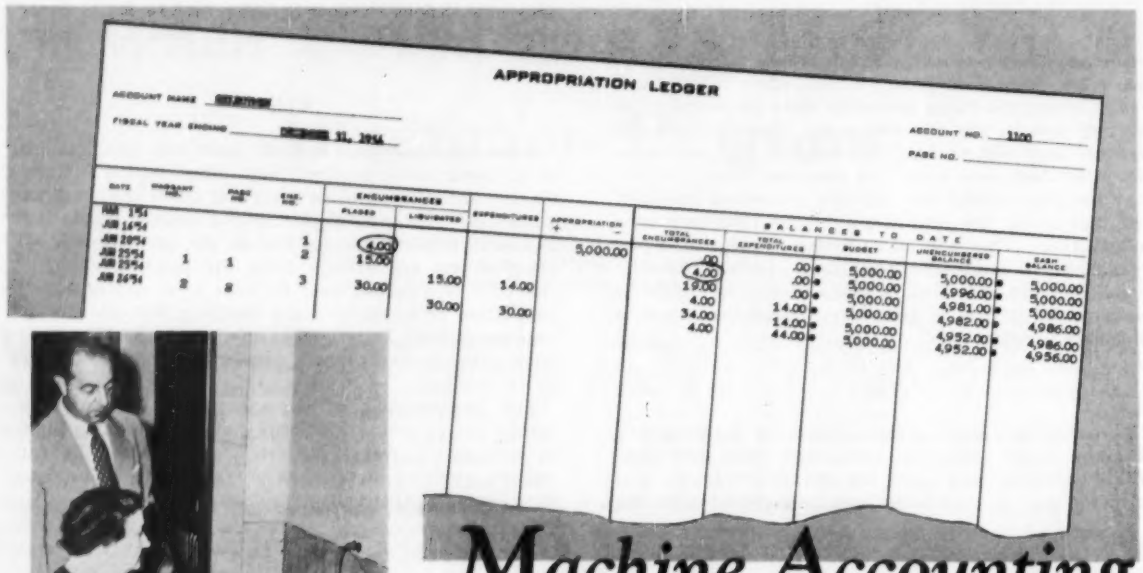
The electric utility company proposed the use of 10-kw electric heaters instead of the oil burners, thus requiring 40 kw for all four sets of doors. Each of these 10-kw heaters delivers 34,000 BTU's per hour and requires a centrifugal circulating pump for each set of doors. Each pump is driven by a ¼-hp, 120-volt, single-phase motor.

Piping System

Each electric heater has its own expansion tank. The piping system for each of the four sections has a nest of six pipes under the door rails at each end of the hangar. The nest for each of the four systems has a header on each end. The piping system is filled with a 50% Prestone solution and heat is needed only when it is used for melting snow or ice.

The electrical supply circuit to each heater is a four-wire, three-phase, 120/208-volt unit. The control circuits of each system require manual closing. This starts the circulating pumps and energizes the heaters through the automatic contactors. A thermostat is provided for each electric heater to protect it in case the water pump stops. In the floor near the rails is an additional thermostat to open the contactor controlling the heater when ground temperature exceeds 35° F.

The rate of flow of the water solution is such that the temperature pickup from the electric heater is about 10° F. in passing through. The water temperature will probably never exceed 50° F. with the ground control set at 35°.



Machine Accounting in Arlington, Mass.

Town Accountant C. T. Foritano watches as Arlington's chief clerk makes out the remittance section of a vendor's check.

By CARMEN T. FORITANO
Town Accountant
Arlington, Mass.

MARCH 1954 began a new era of modern mechanized accounting methods for the Town of Arlington, Mass. Appointed Town Accountant in 1952, I saw that a new method of budgetary accounting was needed for our town of 45,000. The Board of Selectmen furnished an appropriation for the purchase of an accounting machine.

Visits to several towns and cities of comparable size —particularly a review of the system at the City of Quincy, Mass., which was installed by City Auditor Alex Smith—were helpful toward selecting a machine. Our investigation period over, we prepared an extensive system of codes for all appropriation accounts and their supporting classifications. With the outline of the system complete, we invited all major companies in the accounting-machine industry to submit proposals. In August 1953, an order was placed with the Burroughs Corporation for one Sensimatic Model F301, as it possessed the automatic features we wanted.

Gives Unencumbered Appropriation Balances

When purchase orders are issued by the central purchasing agent they are grouped by appropriation code number and listed on an encumbrance sheet. Funds from the proper appropriation card are reserved for the payment of the invoices. (In the case of capital purchase items, months may lapse before the invoice is received.) The Sensimatic automatically computes the total encumbrances already charged aginst the account, as well as the new unencumbered balance. No purchase orders can be approved unless there are sufficient funds in the appropriation. Copies of purchase orders filed by appropriation code serve as an outstanding, which shows the true standing of each appropriation.

Invoices, when received, are sent to the using department, which accumulates its invoices for a 30-day period. One-half of the town's departments submit all invoices to the Town Accountant's office on the tenth of the month; the other half on the fifteenth. The two payment dates avoid loads on the accounting machine.

While the ledgers are being posted, a second clerk has sorted all invoices alphabetically, and has typed the name and address of the vendor on the voucher which is a snap-out three-part form. At the end of the appropriation run, the operator selects a different schedule on the Sensimatic control panel, and the machine is instantly converted for check writing. The detail of each invoice of a vendor is listed on the remittance stub of his check, after which the machine automatically prepares the check, including its number and protection.

A summary warrant showing totals by appropriation is sent to the town manager for approval for payment. When approved, the checks are sent to the town treasurer who runs them through a check-signing machine. The best results we have attained are:

Duplication of work has been eliminated.

Because all encumbrances, liquidations and expenditures are posted to appropriation controls in summary only, no valuable machine time is lost in posting useless detail to control records.

An easy system of cross checks makes it simple to refer to any items either already paid or in the file awaiting payment.

There is sufficient machine capacity to mechanize our payroll work.

Civil Defense and Disaster Policy

Adopted December 1, 1954, *by the American Municipal Association*

IT IS apparent to everyone that the capacity for destruction inherent in atomic, biological, and chemical warfare has grown enormously since our earlier policy statement on Civil Defense.

It is apparent also, that a tremendous lag continues to exist in our capacity as a nation and as cities in particular to survive a hostile attack.

As a means of partially overcoming this lag we recommend a new Civil Defense and Disaster policy to be adopted by the American Municipal Association and which follows herewith.

A. GENERAL POLICY

A-1. There should be a continuing heavy emphasis on the education of people on the effect of atomic weapons so that they can make advance personal decisions for their own safety, since people living in target areas are highly vulnerable.

A-2. Since the threat of atomic attack is so enormous the Congress ought to continue thoughtful and well-considered action in international affairs so that the very existence of American cities is not jeopardized. We especially recommend to the Congress again a much more complete and adequate financial program of civil defense which recognizes the urgent importance of protecting and defending our homeland.

A-3. Since certain federal agencies are advocating limited dispersal of industry over a period of time, state associations affiliated with the American Municipal Association should recommend to their state legislatures a study of the effect of federal dispersal plans as they may affect the tax structure of cities within the target area or states themselves.

A-4. We recommend that the Congress of the United States enact such laws as may be necessary to give to all civil defense agencies a high priority in the procurement of such federal surplus properties as are necessary to the organization, maintenance, and operation of an effective civil defense and disaster program.

A-5. Educators should be encouraged to include a basic course on the need for civil-defense and disaster-preparedness planning as a part of the course of study of every high school, with emphasis on the importance of volunteer help in civil defense organizations. Civil defense and disaster preparedness appears to be a permanent part of our American way of life and acceptance of this point of view at the high-school level will assure the development of a reservoir of informed adults ready to assume their responsibilities in local civil defense and disaster organizations.

A-6. We recognize that there will be difficulty in sustaining a proper level of civil defense preparedness if international tensions lessen. We also recognize that we cannot allow the preparedness to fall below a position which makes the nation vulnerable and unready for sudden emergency.

Therefore, federal, state, and local governments should stress the use of trained cadres of civil-defense workers for civil and natural disasters. The concept of civil defense should not neglect the primary concept of aid in civil disaster.

B. JOINT RESPONSIBILITIES OF FEDERAL, STATE, AND LOCAL GOVERNMENT

B-1. Federal, state, county, and city civil defense organizations, especially by training and education, should bring home to units of government located in the support areas the full realization of the immensity of the problems that will befall them following dispersal or evacuation of a major target area.

B-2. States must assume an even greater responsibility in coordinating and assisting development of civil defense plans and programs, especially in arrangements to be made between target and support areas.

B-3. Cities, counties, and other local governmental agencies should fully cooperate in making such programs effective and in providing such aid as may be required within the limits of their resources.

B-4. All levels of government especially municipalities should review their present legislation regarding civil defense and disaster preparedness in the light of present-day requirements. Action should then be taken to make necessary enactments, amendments, revisions or deletions of municipal ordinances. Existing state legislation should be reviewed by affiliates of the American Municipal Association and necessary legislative action sponsored to bring civil defense and disaster preparedness laws up to date.

B-5. Federal and state programs for the expending of highway funds in target areas should be increased to allow for rapid voluntary dispersal of people if the community desires it. We feel that this program will allow people to live in or near a target city and still have a means of protection. This tremendous investment made in our cities need, therefore, not be abandoned nor would it be necessary to invest additional large sums in new facilities.

B-6. State and federal policies allowing for grants-in-aid for slum clearance and urban redevelopment should be kept consistent with civil defense requirements for reduction of the richness of target areas.

B-7. Further study of a shelter program is necessary by federal, state and local officials to provide shelter in reception areas, or in areas near target areas. In this latter case, we recommend that a program of blast-resistant shelter construction and radioactive resistant shelter construction be considered for recommendation by the Federal Civil Defense Administration.

B-8. All levels of government should review the fiscal problem involved not only in the preparation of

(Continued on page 181)

Although Vero Beach's recently dedicated water-treatment plant looks new, it made extensive use of equipment from the old plant. This resulted in a construction cost that was $90,000 less than total financing revenue raised.

Vero Beach Makes It a Point To Pick the Right Water

By CHARLES C. JEWETT
City Manager
Vero Beach, Fla.

SHOPPING around for the proper raw-water supply paid off for the 4,800 citizens of Vero Beach, Fla., allowing us the opportunity to pick a happy medium between the deep wells and surface sources that looked like our only alternatives. The choice enables us to save at least $10,000 annually in chemical costs alone at our new treatment plant.

Search for New Supply

One point was evident when we embarked on our search—we needed water and needed it badly. An engineering survey completed in 1952 merely confirmed the need that we already knew existed.

If we were going to get water, we were determined to get the best available. So we retained Black and Associates, Inc., of Gainesville, Fla., to ferret out the best and most economical source of supply, and to design pumping and treatment facilities to make the supply available to us. This was a challenge to a consulting engineer. For the better water he would find, the less costly would be the plant he would build and, consequently, the smaller would be his fee. Nevertheless, the engineers stood up to the challenge and found a very good source of raw water for this central east-coast part of Florida, thereby slicing away a portion of sizeable fees they could have earned.

The engineers explored three separate sources: a deep well supply, a surface supply, and a relatively shallow well field that few of us realized was there. After weighing the costs, they recommended the use of a shallow well field.

The chemical quality of the three sources of water can be seen from the following table. The chloride content, as well as the softening costs, eliminated both the deep wells and the surface supply. The latter, incidentally, is partially fed by artesian wells used for irrigation.

Constituent	Deep Wells	Shallow Wells	Main Canal
	(expressed in parts per million)		
Total dissolved solids	1,540	310	547
Silica	17	13	11
Iron	0.01	1.12	0.6
Calcium as $CaCO_3$	189	260	252
Magnesium as $CaCO_3$	247	2.0	72
Alkalinity as $CaCO_3$	160	240	194
Carbon dioxide as $CaCO_3$	16	87	29
Sodium sulfate	230	trace	6.0
Sodium chloride	990	62	284
Carbonate hardness as $CaCO_3$	160	240	194
Noncarbonate hardness as $CaCO_3$	276	22	130
Total hardness as $CaCO_3$	436	262	324
Organic color	3	65	35

A series of test wells indicated that five wells would supply our needs, provided they were 24 inches in diameter, gravel packed, equipped with 30 feet of 10-inch-diameter well screen, and supplied with vertical turbine-type well pumps. The pumps required a capacity of 550 gallons per minute in each of the four wells and 800 gallons in the fifth.

This set of wells, which we very promptly arranged to have constructed, are equipped with Peerless turbine pumps. The pump bowls are set approximately 40 feet below the surface of the ground. Control circuits are being run from the new plant to the wells so that each pump can be started or stopped at the plant when it is necessary.

The engineers made every effort to utilize all the equipment possible from the old plant. By resourceful planning, they managed to reclaim a 1½-mgd softening unit, filter operating tables, hydraulic valves, and even an unused pressure filter which they reworked to serve as a surge tank. The equipment for a second softening unit was purchased by the city, and this unit was installed in a tank fabricated from steel plates salvaged from the gravity softener originally installed in 1926.

Equipment

The new plant consists of the two 1½-mgd Accelator softening units, a recarbonation basin, four gravity rapid sand filters, and the usual auxiliary equipment. The operators use Omega loss-in-weight feeders to apply hydrated lime to the softening unit. This reduces the hardness to about 70 ppm (parts per million) and to about No. 15 on the color scale. We also use an Omega feeder to apply activated silica to the softening units. This measure has proved wise in many Florida softening plants. The silica blends with the flocculating lime to form a tough, quick-setting sludge. The plant has facilities to store 5,000 gallons of silica and pump it directly to the feeder.

The plant is also equipped for both pre- and post-chlorination. However, we only prechlorinate the supply at present, using a Wallace & Tiernan chlorinator with a capacity of 100 pounds per day. The treated water flows to a 120,000-gallon clear well located beneath the filters.

Distributing the Supply

To deliver water to our distribution system we have three electric motor-driven pumping units with capacities of 1,900, 1,400, and 1,000 gallons per minute, respectively. The two larger Fairbanks-Morse pumps are new. The small pump was moved from the former location. A fourth pump, another Fairbanks-Morse product, with a capacity of 4,000 gpm is used for backwashing purposes. The entire battery of pumps is connected to a priming mechanism which automatically keeps the pumps primed so that they may be started instantly.

The city financed the plant by issuing water-sewer revenue bonds amounting to $400,000. The actual cost of the new plant, new well field, collection system, and necessary new distribution mains was $310,000. The funds which remain will be used for water and sewer main extensions.

The construction of these facilities was begun under the administration of Mayor Louis G. Burger and completed during the term of incumbent Mayor Elmer J. Bauer.

Low Cost Small City Air Terminal

The Steelox airport administration building has a residential appearance.

EVEN before the Bowling Green, Ky., airport terminal building was gutted by fire, the station manager had been urging the Municipal Airport Board of Directors to authorize improved facilities. The existing concrete block structure, which was attached to the east wall of the city-owned hangar, was unable to cope with the traffic; and the ticket office was too small and unsuitable.

After inspection of the terminal at the Mayfield, Ky., airport, the Board decided to build one like it, of interlocking steel panel construction that doubles for both structural support and finished surface.

In conjunction with the CAA, the Board advertised and awarded a contract. Among the costs were $850 for repairs to the burned hangar wall, $1,104 for a new chain-link fence, $7,689 for pumps for heating and air conditioning, and $6,615 for additional concrete work and the paving of parking areas and entrance drives. Actual building cost was $35,227.

Construction began in March 1953, and the Armco Steelox sides and roof were completely erected within 10 days after the foundation and floor slab had been laid. The building was ready for use by July.

The structure is 100 feet long, 48 feet wide, and is completely insulated. The entrance porch is 32½ feet long, and the service porch extends the full length of the building. Exterior color scheme is gray with red trim.

Within the building is a spacious waiting room, two airline offices, cargo space, a station manager's office with connecting hall, kitchen, and rest rooms.

The Bowling Green airport accommodates two Eastern Airlines flights a day and services commercial and private planes.

Good city Public Relations All year!

The City Tells Its Story

Municipal Public Relations

Edited by PAN DODD WHEELER
Executive Director, Government Public Relations Association

Public Relations Operation for City in 1955 Can Prove Sound Investment, Survey Shows

THE work a public relations officer does for his city, the salary he is paid, the appropriation for the public relations operation, the number of employees on the staff, the goals of the MPR operation, and the importance attached to the work are more dependent on the community's character and its spirit than on its population or type of government. This is what a survey of 25 government public relations posts, 17 of them in municipalities, indicates. This 1954 survey was made by the Government Public Relations Association and findings are announced here for the first time.

The survey sample includes cities of from 8,000 to 2,000,000 people located in all sections of the United States. The survey shows that, although the public relations officer or department operates under a variety of titles, his main responsibility, as one PRO put it, is "to bridge the gulf we know exists between the taxpayers and the persons elected or appointed to serve them."

Salaries Are Moderate

For his work, the public relations officer in municipalities earns an average of $7,825 annually, which is slightly under the $8,090 his counterpart in other government units (state and federal government) makes. Both the top salary — $22,000 — and the low figure — $4,370—were in the noncity group involved in the survey. The salaries of municipal public relations officials were closer in range. The low was $5,000 and the high $12,000. That top figure is earned by two of the PRO's in the GPRA sample. One heads a public relations unit in a resort community of 30,000, while the other is a department head with PR responsibilities for the entire city of 475,000 people.

Ten of the 17 survey cities have PR officers heading or serving with a staff which averages 8 persons. (The numerical average is high, however, because one of the reporting cities has an unusual 38 persons on the PR staff.) Since some of the reporting cities receive appropriations from funds budgeted for "general government" or the "mayor's office," an "average" allocation for public relations purposes could not be easily determined. The high, however, is the nearly half-million dollar annual appropriation for the PR department in a major resort city of 310,000 permanent residents. The second highest expenditure for PR—$99,000 annually—is also reported by a resort city with a population of 50,000.

The public relations units in the surveyed cities have been operating an average of just over eight years, but this figure is heavily weighted by three veteran operations which are 38, 25, and 20 years old. Minus these three, the average age of the PR unit drops well below six years. The municipal public relations operation is a post-war development, springing partially from the need many cities had for providing citizen information and gaining citizen participation in vast improvement programs necessary at the close of World War II.

MPR Official Titles Vary

Titles of the public relations official vary with each community. That most often used is "director of public relations." Others are "public relations officer," "chief of information and service," "chairman, MPR Committee," and "publications officer." In some cities in the GPRA survey, the PRO is an "administrative assistant" to the city manager or mayor. In one, he is the Village Clerk and has other duties in addition to being charged with the public relations function for his village. Regardless of title, it appears from the survey that every PR officer is responsible directly to the administrative head of the city—a mayor or manager.

The duties of the PR officer, reported by PRO's in the survey, include, generally, these functions: consulting with legislative and administrative officials and advising them on the public relations aspect of city policy; maintaining close relationships with media—newspapers, TV, and radio—making it easier for these public information agencies to obtain information from the city and preparing reports and programs for use by the media; arranging for citizen tours, meetings, surveys; supervising reports, letters, posters, forms and other educational material for citizens; handling complaints; arranging for open houses, dedications, displays, and other special events; planning and writing employee publications, handbooks and PR training materials.

In some cities, the PR unit is also a municipal research and reference organization, collecting and making available data on city government to officials, employees, and citizens. In most of the reporting cities, the PR unit has a responsibility for developing or working with other agencies (Chambers of Commerce, trade and development commissions) to promote business in the city. In resort cities, the PR units—with more money and larger staffs—combine the functions of the usual municipal PR department with those of a tourist bureau and development organization. In these cases, the PR unit arranges for tourist and trade ad-

vertising, fairs, displays, festivals and special promotions designed to lure business and vacationers.

All the public relations units, the survey reveals, spring into action when the city needs an educational campaign for any one of many municipal problems: annexation, bond issues, additional taxes, special assessments, planning and zoning matters, parking meters, changes in traffic regulations and so forth. The city which does not have an operating PR unit to plan and present the informational material, must organize an education effort "from scratch." The city with a regular PR unit turns to it for prompt and experienced action along established channels.

While not in question in the survey, best practice as a PR offical in local government is that he not be a political arm of the city administration. In one of the reporting cities, the PRO indicates that he has retained his position through three city administrations in which all other key positions changed hands.

A convincing argument for a PR operation in local government are the replies to the survey question on indications "of the value of the public relations work." Replies, selected at random, follow.

"A 76.5% favorable vote was given by the people of our city this summer when they went to the polls to vote on continuing the city income tax another five years. The vote took place following a 'low-pressure' campaign by a citizen's group, predicated on the continuous good public relations maintained by the city over a period of years." (Northern city of 260,000)

"PR unit has proven especially helpful in establishment of broad policies for the city and in completing legislative, bond issue and special election programs." (Midwest city of 880,000.)

"Previous administrations have had difficulty in carrying out good plans. The present administration has made more progress than any of the preceding ones . . . much of it due to the improved relations with the people." (West-coast city of 30,000)

"Since the inception of our public relations projects, the citizens of our community seem to be better informed, complain less, and are more willing to cooperate." (Eastern city of 8,000)

"City council has tripled the appropriation for the department from $7,000 to $21,000 in 2½ years. Councilmen are apparently feeling the effects of the PR work." (Midwest city of 475,000.)

"Frequent expressions of approval of program by residents—especially on the annual report and monthly bulletins. And there is the fact that no opposition candidates have entered elections since 1947. The PR program began in 1945." (Eastern city of 25,000)

"The city is now one of the nation's top resorts." (Southern city of 310,000)

"Our reports, films, and broadcasting have helped make residents proud of their city. Officials turn more and more to MPR department for help." (Northern city of 440,000)

The average salary of the municipal public relations officer, from $5,000 to $12,000 as revealed in this survey, is a small price to pay for these results.

Resolve: MPR for the New Year

Good government can operate only in a climate of understanding and cooperative people. If your city is not now getting and using the suggestions and assistance which citizens can and should give, if citizens are apathetic or actively opposed to sound municipal improvements or practices, if people appear not to understand the financial status of the city, if people fail to respond to requests for help in civic programs, if city standards and services are good but public morale and pride is low—resolve to add an MPR unit or officer in 1955. There is a responsible individual or public relations agency in your area which can help your city.

Data on MPR Operations in U. S. Cities

(From a survey, late 1954, by the Government Public Relations Association, 1313 E. 60th Street, Chicago 37, Ill.

POPULATION	PR FUNDS	AGE OF PR	SALARY OF PRO
8,000	—	2 years	$6,250*
17,000	$12,900	6 "	5,640
25,000	10,000[1]	9 "	5,000[1]
25,000	25,000	20 "	5,500
30,000	—	2 "	12,000
56,000	60,000	— "	6,750
50,000	99,000	5 "	10,560
120,000	25,500	5 "	8,300
260,000	14,900	5 "	6,300
310,000	415,000	9 "	9,500
318,000	85,000	38 "	8,280
445,000	22,000	3 "	6,000
475,000	—	10 "	12,000*
600,000	—	8 "	7,200*
672,000	—	6 "	7,000
880,000	—	10 "	9,850
2,000,000	—	25 "	6,900[2]

* Officer in charge of PR has other duties with the city.
1 Agency handles PR. Allocation is agency fee plus expenses for PR. $5,000 is agency fee.
2 PRO is a staff member handling PR for one department of the city government.

G.P.R.A. Officials Gather for Annual Meeting

REPRESENTATIVES from public relations departments in municipal governments and national service organizations gathered from cities in more than 12 states at Philadelphia during December to discuss means of advancing public understanding of city programs and policies. During this annual GPRA meeting Association awards were presented to THE AMERICAN CITY and Editor Harold S. Buttenheim for outstanding service to the broad field of municipal affairs. Harold F. Schneidman, Chief of the Bureau of Public Information in Philadelphia, was also honored for outstanding public relations accomplishments in the City of Brotherly Love. Government Public Relations Association's headquarters are at 1313 E. 60th St., Chicago 37, Ill.

GPRA members and guests at their annual meeting. Left to right around the table: M. W. Lee, Norfolk, Va.; J. W. Bowers, Tenn. Valley Public Power Assn.; H. Richardson, Kansas City, Mo.; J. B. Horne, Jackson, Miss.; Z. Z. Lydens, Grand Rapids, Mich.; S. Pointkowski, Police Athletic League; Mrs. P. D. Wheeler, Exec. Dir., GPRA; M. Nathan, Dayton, Ohio; H. F. Schneidman, Bureau of Public Information, Philadelphia, Pa.; J. Zatman, Maryland-National Capitol Park and Planning Comm.; Mrs. J. Harrison, Colo. Municipal League; G. Kelly, Denver, Colo.; E. K. Stabler, Washington Suburban Sanitary Comm.; S. Oliver, Maryland-National Capitol Park and Planning Comm.; D. J. DuBois, National Recreation Assn.; T. J. Killeen, Detroit, Mich.

Modern Water Rates

PART IX

Minimum Charges Or Service Charges?

A WATER rate rightfully should recognize that the water works it supports must be ready to deliver large quantities of water to each service, upon demand. The individual water user may not want a large quantity, but he does demand that the water works be prepared to deliver it.

This entails certain fixed costs that the water works has to meet whether or not it pumps water. The customer, paying for water on a quantity basis, obviously should not be expected to pay these fixed charges alone. Out of fairness, he has a right to expect customers, who may customarily use small quantities but reserve the right to use large quantities, to shoulder their share of these fixed costs. Both the service charge and the minimum charge represent recognition of this ready-to-serve factor.

Service Charge

Of the two types of charges, the technical man undoubtedly prefers the service charge. It is separate and distinct from the metered rate and is not affected by the amount of water used. It is clearly identifiable. An example might be:

RATES PER QUARTER

Service charge	$1.00
Volume of water (in gallons)	Metered charge (*per 1,000 gallons*)
First 5,000	$0.40
Next 15,000	$0.25
Etc.	

Minimum Charges

The public, in contrast, undoubtedly prefers the minimum charge for the simple reason that the customer who makes his payment receives, in return, the right to use a tangible amount of water. Service, to him, means something more concrete than a mere readiness to serve. An example might be:

RATES PER QUARTER

Volume of water (in gallons)	Charge (*per 1,000 gallons*)
First 1,000	$1.40 min.
Next 4,000	.40
Next 15,000	.25

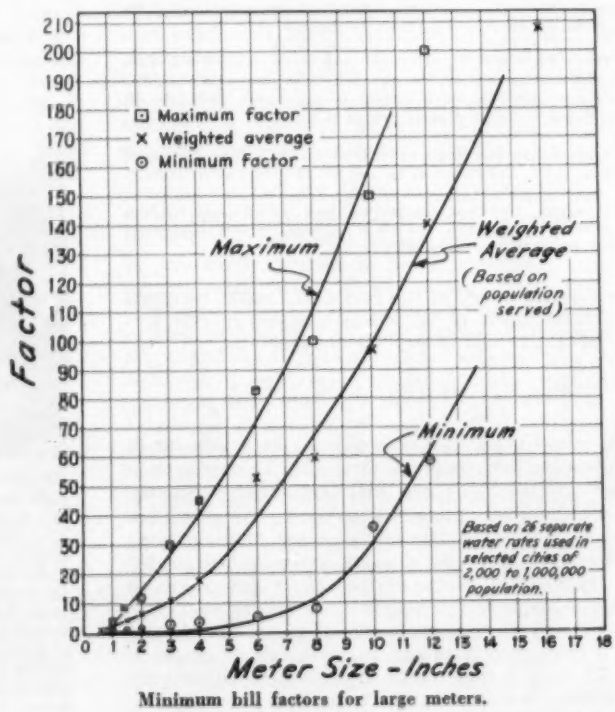
Notice that both rates will require the customer to pay exactly the same amount. The second example, however, avoids the embarrassment of explaining to an indignant customer why he has to pay a service charge when he was away all month and "didn't get any service."

If a water works uses a minimum charge, it ought to set the volume of water that this charge purchases low enough to avoid damaging the usefulness of the rate schedule. As mentioned earlier in this series, water rates not only apportion the charges for water fairly, but they also encourage thrifty use of water. However, if the minimum charge will permit the average family to use more water than it has need for, then it debases the metered schedule. The charge then becomes no more than a flat rate, and all incentive to repair leaky plumbing fixtures is destroyed.

In the past, some have argued that the minimum charge should entitle the user to enough water for ordinary sanitation purposes. A volume of 2,000 gallons per month will provide a family of two with a little more than 30 gallons per person per day, which should be ample and represent a good basis for the minimum charge. Of 59 water rates selected from those published thus far in this series, because they appear representative, 10 used no minimum charges at all. The remaining volume of water that the minimum charges will purchase, calculated on a monthly basis, run as follows:

MONTHLY MINIMUM QUANTITIES

No. of Rates	*Gallons Purchased By Minimum Block*
1	750 to 1,500
10	1,500 to 2,250
9	2,250 to 3,000
6	3,000 to 3,750
10	3,750 to 4,500
4	4,500 to 5,250
9	higher



Minimum bill factors for large meters.

If the minimum charge embraces certain fixed charges, it obviously will have a unit cost of water in the minimum block that is substantially higher than the unit cost for water above this block. Notice, in the example for the minimum block, the water costs $1.40 per 1,000 gallons. Beyond this, it drops to only 40 cents per 1,000. However, the water rates of many well-established and well-managed water systems do not take advantage of this. In 17 of the 59 rates mentioned previously, the unit cost of water purchased by the minimum charge is the same as that used in the first block, and the volume of water allowed in the first block of the rate schedule is substantially greater than the volume that the minimum permits.

Obviously, the rate schedules are performing in a workmanlike manner. Nevertheless, if rate adjustments become necessary, the possibility of increasing the cost of water purchased by the minimum charge appears worth investigating.

The ratio between the total charge for the minimum and the price of the rate charged in the first block is of interest in demonstrating present practice. The usage followed in the rates analyzed above runs as follows:

No. of Rate Schedules	*Minimum Charge Exceeds Rate in First Block*
6	2–3 times
11	3–4 "
9	4–5 "
8	5–6 "
3	6–7 "
2	7–8 "
3	8–10 "
2	10–11 "
3	15–17 "
2	19–20 "

Large Meter Factor

Frequently, both minimum charges and service charges recognize a demand factor that varies with the size of the service installed by the water user. Obviously, a water works has to invest more money in equipment to be ready to serve a 6-inch line than in a line of only ⅝ inch in diameter. Of the schedules investigated previously, 26 based their rates on the minimum-charge method and increased the minimum when the service required a larger meter. The accompanying graph shows how these charges increase for meters, varying from ⅝ to 16 inches. Note that they do not increase proportionately, since the effect of greater friction in the smaller pipe has to be recognized.

The graph shows the lowest, the highest, and the average factor used among the 26 rates studied. The average is weighted on the basis of population served. In tabular form, the data appear as follows:

Meter Size (in inches)	Minimum Bill Factor Smallest	Average	Largest	No. Rates Averaged
⅝	1	1	1.0	26
¾	1	1.2	1.9	26
1	1	2.1	3.5	26
1½	1.5	3.9	5.0	26
2	1.9	6.0	12.0	26
3	2.6	11.0	30.0	26
4	3.9	17.4	44.8	25
6	5.2	32.5	82.5	21
8	8.0	59.2	100.0	13
10	36.3	96.4	150.0	6
12	58.1	140.0	200.0	4
16	.....	208.0	.....	1

From these points, we begin to trace the pattern of present good practice in the use of minimum charges and service charges. At present, the use of the minimum charge appears to be more popular than the service charge, probably because the public will more readily accept it. Of the rates studied, six used the service-charge method, 49 used the minimum charge, and 10 used neither.

When using the minimum charge, it appears wise to make the unit cost of water purchased by the minimum greater than the unit cost used elsewhere in the rate scale. To protect the value of the metered charge, it appears wise to keep the volume of water purchased by the minimum as low as remains practical. A top limit of 3,000 gallons per month seems to be a good standard.

And finally, both service charges and minimum charges for services requiring larger meters justifiably can be increased because of the greater need to be ready to serve.

TOLEDO, OHIO

Rates Per Quarter

Size of Meter (in inches)	*Quantity Allowed* (in cubic feet)	*Minimum Charges*
⅝	2,000	$2.60
¾	3,000	3.90
1	5,000	6.50
1½ and over	12,000	15.60

Volume of Water (in cubic feet)	*Metered Charges* (per 1,000 cubic feet)
First 50,000	$1.30
Next 450,000	1.26
" 5,000,000	.99
Excess	.72

Miscellaneous Regulations

1. City charges monthly rates for commercial services. Minimum charges are half the quarterly charges and allow half the volume of water. Quantity charges are the same; however, the volume in each block is one-third smaller.
2. Rates outside the city are increased 10%.
3. Unmetered fire-service lines are charged 50 cents per inch of diameter per month.
4. When necessary, lawn sprinkling is restricted to alternate days; even house numbers on even calendar days, odd numbers on odd calendar days.
5. No restrictions are placed on air conditioning.

General Data

Population served	370,000
Services (96% metered)	96,500
Hydrants	7,217
Valves	13,285
Miles of mains	960
Supply—Lake Erie	
Treatment—rapid-sand filter	
Storage facilities—elevated tank, 1,000,000 gallons; covered reservoir, 35,000,000 gallons	
Average demand	60 mgd
Plant capacity	80 mgd (treatment); 195 mgd (pumping)

Typical Costs Per Quarter

Gallons	*Cubic Feet*	*Costs*
2,000	1,200	$2.60
15,000	2,000	2.60
50,000	4,000	5.20

Remarks

1. All services except those serving other municipal departments are billed for water.
2. Water department owns all meters; places them in a meter box at the curb if the service is galvanized iron and over 125 feet long; places it in occupied building if less than 125 feet or Type K copper.
3. Bills are processed on a National Cash Register billing machine; carry a 35% surcharge for sewer service.
4. Present rates were established in 1954 and represent about a 10% decrease in rates established in 1952. These, in turn, were raised about 50% over previous rates.

GEORGE J. VAN DORP
Commissioner

FAIRBURY, NEBR.

Rates Per Month

Volume of Water (in cubic feet)	*Metered Charges* (per 100 cubic feet)
First 5,000	$0.20
Next 5,000	.16
" 5,000	.13
Excess	.10

Miscellaneous Regulations

1. Minimum monthly charge is $1.00.
2. To encourage summer lawn sprinkling, the city lowers rates to 10 cents per 100 cubic feet from April 15 to September 15. Monthly minimum remains.
3. City maintains no fire-protection charges.

General Data

Population served	6,500
Services (100% metered)	1,575
Hydrants	218
Valves	205
Supply—wells	
Treatment—chlorination	
Storage facilities—elevated tank, 500,000 gallons	
covered reservoirs, 2,600,000 gallons	
Average demand	0.8 mgd
Plant capacity	3.0 mgd

Typical Costs Per Month

Gallons	*Cubic Feet*	*Costs*
3,000	400	$1.00
5,000	667	1.40
10,000	1,333	2.70

Remarks

1. City charges for all water and diverts none of the revenue to other purposes.
2. Water department owns all meters and places them in the building occupied by the user. Accuracy of meters is checked once every five years.
3. Department prepares bills using Burroughs equipment.
4. Sodium silicofluoride is used for fluoridation.
5. Rates have remained unchanged for many years.

G. E. Bell
Superintendent of Utilities

PHILADELPHIA, PA.

Rates Per Year

Size of Meter (in inches)	*Minimum Charge*	*Quantity Allowed** (in cubic feet)
⅝	$10.50	4,000
¾	16.00	6,000
1	24.00	9,000
1¼	42.00	16,000
1½	66.00	25,000
2	168.00	65,000
3	372.00	145,000
4	672.00	257,500
6	1,500.00	575,000
8	3,000.00	1,150,000
10	4,200.00	1,600,000
12	6,000.00	2,300,000

* All water used in excess of the minimum shall be charged at the rate of 70 cents per 1,000 cubic feet.

Miscellaneous Regulations

1. Existing air-conditioning installations of 50 tons or more, and new installations of 10 tons or more, must recirculate the cooling water. These limits probably will be reduced.
2. No fire service charges are made against closed service connections.
3. Flat rates for unmetered services also are made, but these services are gradually being replaced with meters

General Data

Population served	2,225,000
Services (60% metered)	510,000
Hydrants	22,796
Valves	38,631
Miles of mains	2,796
Supply—river	
Treatment—slow-sand filtration	
Storage facilities—open reservoirs, 1,800,000,000 gallons	
covered reservoirs, 118,000,000 gallons	
Average demand	370 mgd
Plant capacity	500 mgd

Typical Costs Per Year

(⅝-inch meter)

Gallons	*Cubic Feet*	*Costs*
36,000	4,800	$11.06
60,000	8,000	15.30
120,000	16,000	28.90

Remarks

1. City delivers water to churches and similar organizations at 6 cents per 1,000 cubic feet at no minimum charge.
2. Meters are property of the city; placed in user's building.
3. Bills are processed on IBM billing equipment.
4. Hydrofluosilicic acid used for fluoride treatment as dental health measure.
5. Present rates were established in December 1952, raising minimum charges 30% and the quantity rate 55%.

G. E. Arnold
Superintendent

QUINCY, ILL.

Rates Per Quarter

Volume of Water (in cubic feet)	*Charges* (per 100 cubic feet)
First 600	$2.70 (min.)
Next 9,400	.30
" 90,000	.20
Excess	.08

General Data

Population served	45,000
Services (97% metered)	11,843
Hydrants	759
Valves	1,572
Miles of mains	126
Supply—Mississippi River	
Treatment—rapid-sand filter and softening	
Storage facilities—elevated tank, 300,000 gallons	
covered reservoir, 20,000,000 gallons	
Average demand	3.9 mgd
Plant capacity	6.0 mgd

Typical Costs Per Quarter (discounted)

Gallons	*Cubic Feet*	*Costs*
9,000	1,200	$4.05
15,000	2,000	6.21
30,000	4,000	11.61

Remarks

1. A 10% discount is granted for prompt payment.
2. Water fund has contributed approximately $50,000 annually to the city's general fund.
3. City operates the sewage-disposal plant from water funds.
4. Water Department owns meters; places most in the building occupied by user. Meters are checked once each 10 years.
5. Parks, schools, and charitable institutions pay 8 cents per 100 cubic feet. Other city departments get water free.
6. Bills are processed on Remington Rand automatic billing machine.
7. Fluoridation is accomplished by the use of ammonium silicofluoride.
8. Rates have increased 20% in recent years.

W. R. Gelston
Superintendent

JERSEY CITY, N. J.

Rates

1. City uses a single rate of $1.20 per 1,000 cubic feet.
2. Air conditioning is controlled by a city ordinance.
3. The city imposes no separate fire-service charges.

General Data

Population served	400,000
Services (100% metered)	36,150
Hydrants	3,398
Valves	8,009
Miles of mains—distribution	275
transmission	41
Supply—river	
Treatment—chlorination	
Storage facilities—raw, 10.8 billion gallons	
open reservoirs, 100,000,000 gallons	
Average demand	60 mgd
Plant capacity	100 mgd

Typical Costs Per Quarter

Gallons	*Cubic Feet*	*Costs*
9,000	1,200	$1.44
15,000	2,000	2.40
30,000	4,000	4.80

Remarks

1. City distributes water without charge to other city departments only.
2. Water user owns the meters. Commercial and industrial meters are read monthly; domestic meters, quarterly.
3. Bills are prepared on an Underwood Sundstrand billing machine.
4. Rates have remained unchanged for many years.

Harold M. Ohland
Chief Engineer

BELFAST, MAINE

Rates Per Year

Per Fixture	*Charges*
First faucet	$10.00
Second "	2.00
Toilet	5.00
Bath	5.00

General Data

Population served	3,000
Services (15% metered)	1,200
Hydrants	79
Valves	120
Miles of mains	12
Treatment—chlorination	
Storage facilities—raw, 200,000,000 gallons	
standpipe, 235,000 gallons	
Average demand	0.8 mgd
Plant capacity	1.22 mgd

Remarks

1. Lawn sprinkling is restricted to two hours per day under normal conditions; prohibited during droughts.
2. City supplies water free to schools, the public library, and the municipal building.
3. City meters commercial accounts only; places the meters in the building occupied by users, and reads meters quarterly.
4. Rates have remained unchanged for many years.

Horace Blanchard
Superintendent

ROY CITY, UTAH

Rates Per Quarter

Volume of Water (in gallons)	*Charges* (per 1,000 gallons)
First 10,000	$1.50 (min.)
Next 40,000	.125
" 40,000	.11
" 40,000	.10

Miscellaneous Regulations

1. Water users divided into two areas. Lawn sprinkling restricted to alternate days for each.
2. No restriction exists on water used for air conditioning.
3. No extra charge is made for public or private fire protection.

General Data

Population served	7,500
Services (100% metered)	1,000

(Continued on page 182)

Contract Buying Can Save Money

By JOHN G. KRIEG
City Purchasing Agent
Cincinnati, Ohio

THE purchasing gamut of a large city like Cincinnati runs from one paper punch at $1.25 to a formal contract for a two years' supply of gasoline at over half-a-million dollars. Annual purchases in 1953 for a dozen different commodity groups are listed below.

In addition to the purchase of supplies, materials, and equipment, the Purchasing Department awarded orders and contracts for contractual services amounting to $31,390 for non-competitive services and $3,101,215 for competitive services.

Automotive Equipment

During 1953 the city purchased 29 coupes at $1,080 each, 69 two-door sedans at $1,145 each, 18 four-door sedans at $1,181 each, and 17 station wagons—a total of 133 passenger cars. Of these, 122 were replacement units and 11 were additions to equipment. The prices quoted resulted in a saving on these units of $15,275 as compared with the nearest competitive bid and a saving of $18,080, compared with 1952 contract prices.

The achievement of a purchasing department is not measured by how much money is spent, but how much money is saved. For instance, by including a drawing in our inquiry for price rather than requiring that the bidders examine a sample, which consumes valuable time on their part and even narrows competition, we were able to save $600 on the purchase of shim ring castings. Considerable savings resulted from our long-term contracts which protected the city against price increases. This type of saving is well illustrated by deliveries of soda ash and liquid chlorine made under such contracts subsequent to general price increases which went into effect on July 1, 1953, but had no effect on the city's cost, with the result that the following savings were realized:

Item	Quantity Delivered after 7-1-53	Amount of Increase 7-1-53	Total Saving
Soda Ash—Truck load deliveries—100 lb. bags	812 tons	$ 3.00 ton	$2,436
Liquid Chlorine—Truck deliveries—1-ton cylinders	717 tons	12.00 ton	8,604

Savings in excess of $3,000 accrued to the city during 1953 through direct allowances granted on purchases to compensate for the Federal Excise Taxes included in published list prices on which quotations are normally based. Another saving was in cash discounts totaling $38,172, offered for prompt payment of invoices by various suppliers.

We disposed of obsolete material, supplies, and equipment of no further use to the city, thereby realizing $165,913.61.

Our Division of Reproduction and Printing centralizes these requirements for all agencies of the city government. In addition to the saving from rates lower than the standard commercial rates, the Division's annual income normally exceeds operating expense by several hundred dollars; this reverts to the general fund. No attempt is made to do all the city's printing, but for the type of service available, the Division of Reproduction is able to provide quicker service at rates well below standard commercial rates.

The Purchasing Department has 155 Standard City of Cincinnati Specifications. We also maintain a library of Federal Specifications and specifications compiled by various technical and industrial organizations.

Specifications are subject to continuous review to determine their applicability to city purchases and, through consultation with the using agencies and representatives of industry, the city's standard specifications are continuously being revised.

1953 Annual Purchases for 12 Commodity Groups

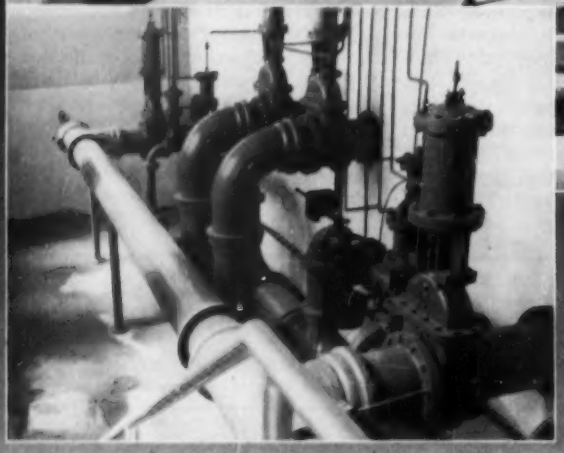
	Purchase Orders	Contracts	Amount
Janitor and Cleaning Supplies	527	4	$55,980
Paving, Road & Building Materials	212	25	384,355
Lubricants, Oils, Greases & Gasoline	145	8	618,351
Automotive Equipment, Parts & Accessories	610	51	960,707
Paints, Varnishes, Lacquers, Glass, etc.	464	4	82,686
Hardware, Tools & Appliances	1,576	7	142,719
Iron and Steel—Castings and Forgings	744	48	1,717,556
Traffic & Signal System Supplies & Equipment	103	21	144,345
Office Equipment	109	3	28,898
Photographic, Drawing & Engineering Equipment	371	5	99,688
Laboratory & Hospital Supplies & Equipment	958	37	227,536
Recreational & Playground Supplies & Equipment	292	6	59,106

THOMSON, GEORGIA

Water Works Plant (Completed in 1953)

WIEDEMAN & SINGLETON
Engineers
Atlanta, Georgia

The 1.0 M.G.D. Thomson Water Works Plant showing flocculation and sedimentation basins in foreground. Filters have Wheeler Bottoms by Builders-Providence.



Builders Model RCE Controllers in this neatly designed pipe gallery automatically maintain constant flow through filters.

Builders Filter Valve Operating Tables with Loss of Head and Rate of Flow Gauges for convenient control of each filter.

Industrially speaking, Georgia is one of the fastest growing States in the East. To take care of a present population of 5000 and to be prepared for further expansion, the city of Thomson recently completed this fine new water works. Construction, by Sullivan, Long & Hagerty of Birmingham, has resulted in a small plant that's "big league" in every respect, employing the same type of instrumentation and controls used in many of the largest filtration plants for low cost and accurate operation.

For Bulletins describing Builders Water Works Equipment installed at the Thomson Water Works Plant, address Builders-Providence, Inc. (Division of B-I-F Industries, Inc.), Providence, Rhode Island.

BUILDERS-PROVIDENCE
DIVISION OF B-I-F INDUSTRIES, INC.
BUILDERS IRON FOUNDRY • PROPORTIONEERS, INC. • OMEGA MACHINE CO.
BIF METERS FEEDERS CONTROLS

First "Workable Program" Under 1954 Housing Act Is Approved

CLARKSVILLE, Tenn., is the first city in the country to have a government-approved "workable program" for the elimination and prevention of slums and blight. With this approval Clarksville is now eligible to receive federal financial help in carrying out projects involving the clearance or rehabilitation of slum and blighted areas. Such a project to be undertaken in the downtown section of Clarksville under provisions of the Housing Act of 1954, is now being considered.

Clarksville is also now eligible to receive aid for the construction of public housing, and an application for 100 additional units has been filed with the Public Housing Administration. Furthermore, homeowners living in renewal areas (sections of Clarksville that are run down or beginning to decline) can receive special mortgage insurance from the FHA to help them finance improvements or new construction on their houses.

Finally, moderate income families that are displaced from their homes by clearance projects or other governmental actions in connection with renewal programs can now receive a special low-interest mortgage insurance to help them finance new low-cost homes in new locations.

The workable program submitted by Clarksville and approved by Housing Administrator Albert M. Cole illustrates the seven basic features required in each program by the Housing and Home Finance Agency. The following paragraphs describe the HHFA requirements and the Clarksville program.

1. ***Codes and Ordinances.*** *The HHFA requires the workable program in every city to include "the adoption of a comprehensive system of codes and ordinances which prescribe adequate minimum standards of health, sanitation and safety under which dwellings may be lawfully occupied."*

All of the necessary codes and regulations except a housing code are already in effect in Clarksville. A housing code is scheduled for preparation early in 1955 and for adoption by June 1955.

2. ***General Community Plan.*** *The "formulation and official recognition of a comprehensive general plan for the community as a whole" is the second of HHFA's basic workable-program requirements.*

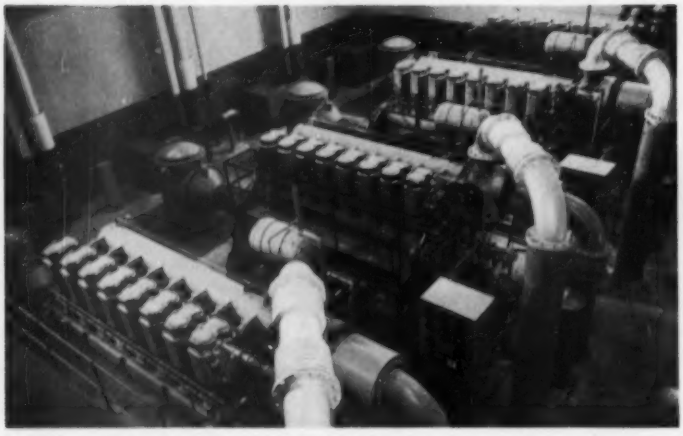
In Clarksville a Thoroughfare Plan has been completed and adopted. A Land Use Plan and a Zoning Ordinance are well along and, at the time of the approval of the program, were scheduled for adoption in December 1954. A Community Facilities Plan is timed for preparation in mid-1955, while a Public Improvements Program is to be completed during the fiscal year beginning July 1955. Clarksville's general planning activities are being carried forward with the technical assistance of the Tennessee State Planning Commission.

3. ***Neighborhood Analyses.*** *HHFA re-*

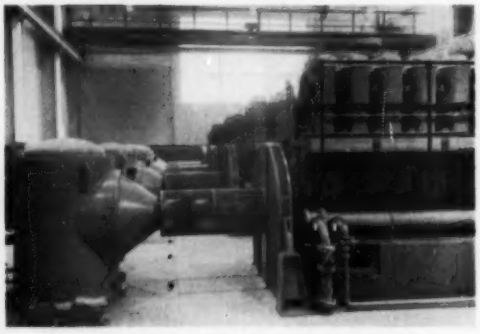
The Oakland storm water pumping station is equipped with four Enterprise Turbocharged Diesels driving huge mixed-flow pumps. Drainage conduits are large enough to drive an auto through.

Early construction stage of new pumping station, heart of the East Bay city's lowland drainage and flood control project.

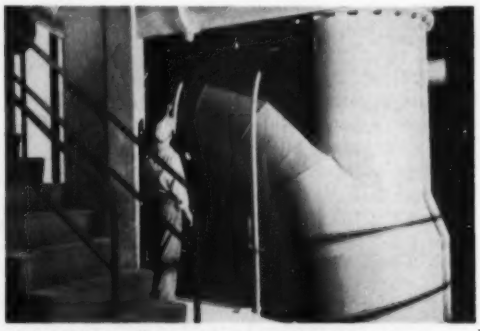
Let it pour! Oakland licks storm flood problem with new diesel pumping plant



The four 1200 BHP Enterprise DSG-318 Engines are completely automatic, require no attendant. Rising water level starts engines, regulates speeds for proper pumping capacity.



Eight-cylinder engines drive giant axial flow pumps though flexible couplings and right angle gears.



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quires each local workable program to promote "the establishment and preservation of sound, healthy neighborhoods of decent homes and suitable living environment for adequate family life."

The program must delineate declining areas that are to be translated into desirable residential neighborhoods through conservation, rehabilitation and/or clearance. Analyses of these areas must identify the causes of neighborhood deterioration and suggest proposed remedies.

Based on an analysis of an existing Land Use Map and a special survey conducted in 1950, the Tennessee Planning Commission and the Clarksville Housing Authority have collaborated with existing city officials in outlining eight areas needing remedial action. HHFA recommended the preparation of a neighborhood study to show the approximate boundaries of the residential neighborhoods in which the areas needing remedial action are located. The city has advised that it believes that such a study can be completed by July 1955.

4. ***Administrative Organization.*** *The fourth HHFA requirement is that there be adequate "administrative responsibility and capacity for both effective enforcement of codes and ordinances, and the carrying out of designed renewal programs and projects."*

The HHFA reports that in Clarksville, the administrative organization necessary for carrying on the activities involved in the workable program has been or will be provided.

5. ***Financing.*** *The fifth "workable program" requirement is that the community "recognize its financial obligation involved in completing the elements of the workable program and in carrying out any desired urban renewal activities."*

Clarksville, according to HHFA, recognizes that further expenditures of municipal funds will be necessary to carry out its workable program. It has made a commitment that these funds will be forthcoming.

6. ***Housing Displaced Families.*** *The sixth requirement is that a specific plan must be developed for the rehousing in decent, safe, and sanitary accommodations of any families displaced by clearance, rehabilitation, or other renewal programs.*

In Clarksville the City Planning Commission and the Housing Authority have taken definite action to assure the availability of decent and safe housing within the means of the families to be displaced. Measures include utilizing vacancies and turnover in private housing, rehabilitating private housing, encouraging the construction of private housing and applying for additional public housing. Special attention is being given to expanding the supply of good housing open to minority groups. An extension of utilities to an existing private housing project will enable development of a nearby tract for private housing for Negroes.

7. ***Citizen Participation.*** *The seventh HHFA requirement is that there be "community-wide participation on the part of individuals and representative citizen organizations which will help to create a general awareness of the importance of urban renewal and to provide . . . the understanding and support which is necessary to insure success."*

In Clarksville the community participation includes periodic joint meetings of the Mayor and City Council, the Planning Commission, the Housing Authority, and representative citizens to discuss and take appropriate action of the slum clearance and urban redevelopment program. Meetings have been held by the Housing Authority with Negro groups who expressed full support.

Metropolitan Area Finance

Paragraphs from a paper presented at the Tax Institute Symposium, Princeton, N. J., November 19, 1954

By FREDERICK L. BIRD
Director of Municipal Research, Dun & Bradstreet, Inc.

OVER the past generation the states have done a better job of building highways than of solving the metropolitan governmental problems which the highways produced. There is ample evidence, however, that the job is not being neglected, such as the existence of formidable metropolitan special districts and the emergence of a wide assortment of local nonproperty taxes and of thousands of local authorities—sometimes referred to as "borrowing machines;" but the problems keep outdistancing the solutions, and will continue to do so until the solutions become uncompromising answers to clearly identified basic needs. . . .

Many of the states, through increased grants-in-aid and sharing of taxes, by permitting the levy of local nonproperty taxes, and by moderating the rigidity of tax rate limits, have gone far in relieving a situation that was critical not many years ago. Some of these solutions are of doubtful equity and efficiency, however, such as Pennsylvania's authorization for localities to levy any tax not used by the state, and some of them are of precarious dependability, such as the local use or sharing of taxes of high elasticity.

Some of the obvious disadvantages of the levy of nonproperty taxes, such as a sales tax or income tax, by individual local governments in a metropolitan area can be eliminated by a metropolitan-area approach to the problem—through action by metropolitan counties. Examples of how this is being done successfully, under state permissive legislation, are Erie County, New York (metropolitan Buffalo), which levies a retail sales tax and distributes it to school districts in the county, and Jefferson County, Alabama (metropolitan Birmingham), which has taken over the beer tax formerly levied by several municipalities and levies it countywide for municipal distribution. . . .

Grants, shared taxes, and local nonproperty taxes and service charges are the alternative sources of additional revenue. Grants can be used effectively as aids to fiscal stability, and both grants and shared taxes have the administrative advantages of broader jurisdiction; but neither places the responsibility for raising revenues with the agency which spends them. Locally imposed taxes meet this seemingly desirable specification, but taxes suitable for local use are limited and the administrative duplication is expensive. Consideration might well be given to a device which would combine local responsibility with administrative economy and help to integrate state-local tax structures, namely, a surcharge by central cities and metropolitan counties on such productive state taxes as retail sales and personal income taxes.

For copies of the complete paper apply to the Tax Institute, Inc., 457 Nassau Street, Princeton, N. J.

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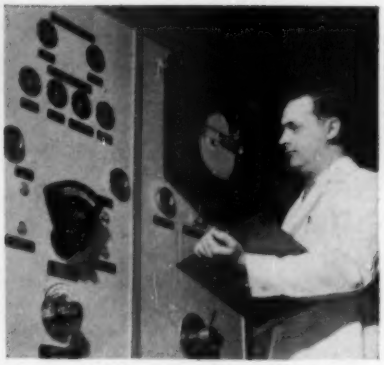

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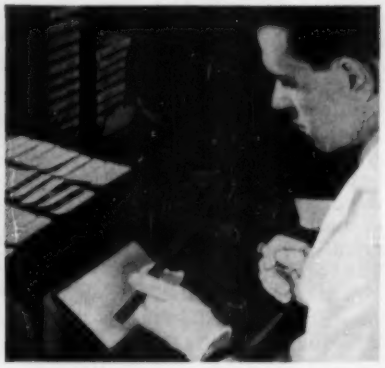

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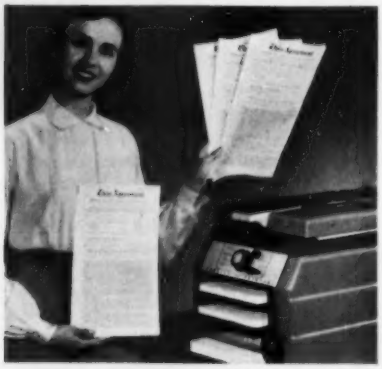

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A Garbage Cooking Plant

(Continued from page 119)

by means of a tank truck which straddles a cement trough into which it dumps the hog feed as it moves up the line. Experience indicates that 3,200 hogs can be fed in approximately one hour.

To maintain a constant supply of 3,200 hogs who will feed on the cooked garbage, the Municipal Farm must have on hand 800 sows, 45 boars, and 1,650 pigs eight weeks old or younger—a total of 2,495 animals. These, plus the feeders, make a grand total of 5,700 animals. As of September 1, 1954, the farm counted 3,789 pigs: 600 sows, 24 boars, 1,747 feeders, and 1,418 pigs. A large number of the present sows will farrow by November and should supply the maximum feeder population by January 1, 1955. Additional feeder stock is being acquired and production scheduled.

The new cooking plant was constructed by the Columbia Steel Tank Company of Kansas City, under the supervision of the Public Works Department.

The plant is housed in a steel building 50 feet wide, 80 feet long, and 18 feet high. The structure stands on a 2-foot concrete wall built on a concrete foundation. Roof and sidewalls are covered with 24-gauge, galvanized-steel sheets; six overhead wooden doors measure 10 feet by 10 feet, and another door, 16 feet by 10 feet.

The 10-ton, raw-garbage hopper-collector is 8½ feet wide by 15 feet long and features ¼-inch-thick vertical sides and sloping bottom plates of hot-rolled steel. Incoming cans of garbage are dumped directly into this hopper; the empty cans proceed to the sterilizer at the southwest corner of the building and then are loaded directly onto farm wagons.

Conveyor Belt System

A 3-foot-wide by 15-foot-long neoprene conveyor belt is provided to transport the raw garbage into the 100-hp Jacobson hammermill grinder. The conveyor belt rides over an 8-inch, magnetic-head pulley which will attract all metal objects that cannot be sorted. A metal walkway on each side of the conveyor belt permits sorters to remove extraneous material from the raw garbage before it enters the hammermill. The sorted garbage then automatically passes into a universal hammermill.

The hammermill discharges the material through a short, force-feed horizontal screw and into a vertical lift screw. This screw will, in turn, elevate the garbage approximately 25 feet above floor-level. At this point, it is deposited into a horizontal screw mounted on a kingpin swivel. The outboard end of the screw is supported by a circular track, permitting the material to be discharged into any of the four cooking vats which are arranged in a semicircle.

Treatment Tanks

The four 15-ton, guaranteed-capacity (actually 25% greater) garbage-treating tanks are 11 feet in diameter by approximately 8 feet in height. They each have a slightly cone-shaped bottom and a removable cover. The tanks are fabricated of ¼-inch, hot-rolled steel. A 12-inch gate valve is provided at the bottom of the tank for gravity discharge of the cooked garbage. Inside the tank, a three-blade agitator is provided with a vertical shaft coupled to a gear reducer which is powered by a 3-hp enclosed motor. This mechanism provides ample agitation of the material. Live steam enters through four openings in the bottoms of the tanks to penetrate the entire cooking mass as it is agitated.

Two automatic 125-hp, package-type boilers provide steam at 60 psi. This pressure is then reduced to 10 psi before being introduced into the cooking vats. Each boiler is capable of heating all four vats simultaneously. The fuel now being used is either No. 5 or No. 6 fuel oil. However, we hope that in the near future gas will be made available in this area which will prove not only cleaner to fire but more economical. In addition to the facilities at 25th and State Line, improved radiant heated farrowing houses and other facilities for pig production have been built.

Kansas City is proud of this project not only because of its conservation value but because it is an example of the effectiveness of employees operating under a nonpartisan, nonpolitical form of government. When given an opportunity to exercise initiative and ingenuity, employees in government do become as inspired as those in private industry.

Colleges Help Cities' In-Service Training

OFFICIALS in four U. S. cities have obtained the cooperation of nearby colleges in setting up and administering in-service training programs for city employees, the International City Managers' Association reports.

The cities are Peoria, Ill.; Wichita, Kans.; Ogden, Utah; and Norfolk, Va.

Fifty members of the ***Peoria*** Police Department enrolled for 13 weeks in a group in-service training course in municipal fire administration, which is offered by the Association. Sessions were scheduled for once a week at Bradley University.

In ***Wichita,*** the University of Wichita worked with the local Police Department in sponsoring a three-day seminar in police administration. In all, 41 persons attended the sessions.

Ogden has finished its second full year of in-service training in cooperation with Weber College which furnished instructors and conference leaders. Since the program began, more than 140 of the city's employees have taken part. Twenty-two took a course on probation problems; 26 were in public relations; and 95 were in four of the municipal management courses offered on a conference-correspondence basis by the association.

Norfolk is in its third year as a member of a cooperative training system for engineers at the College of William and Mary, at Williamsburg, Va. Under the program, the student attends school three months and then works three months. Two students are assigned to the city, so that they take turns going to school and working.

Flying Saucers Forbidden To Land in French Village

THE mayor of Chateau-Neuf-du-Pape, a French village famed for its excellent wine, issued a decree in October 1954 forbidding flying saucers to land. The constable of the 1,600-person village has been ordered to impound any saucers that disobey the decree. The mayor said the new regulation was necessary because such strange aircraft "would be of a nature to disturb public order and the tranquillity of the inhabitants."

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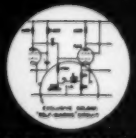

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First Pedestal-Type Water Spheroid

NORTHBROOK, ILL., gets credit for having the first pedestal-type water spheroid * ever erected. The tank is of welded steel construction and is of a smooth and graceful design. It has been built to provide storage capacity for 500,000 gallons.

The tank measures 55½ feet in diameter. The riser supporting the tank contains no water, but houses the inlet-outlet pipe, the ladder, and other fittings. The uncluttered exterior, therefore, has a streamlined appearance. The frustum of the riser is 32 feet in diameter at the base and will be used to store supplies of both the water and fire departments.

The tank was fabricated and erected by the Chicago Bridge and Iron Company. Suhr, Berryman, Peterson & Suhr, of Chicago, served as consulting engineers for the project.

Northbrook, a city of 3,350 inhabitants, obtains its water from nearby Glencoe, a Lake Michigan shore city. The high-water mark in the Northbrook tank will be 135 feet, to balance with the high-water line in the Glencoe tank.

* A spheroid resembles a sphere but differs from it. In this case, the flattened shape provides storage for a larger volume of water at a more favorable range of heads. Tanks like this, built to a true sphere, rarely hold more than 100,000 gallons.

A new type of elevated tank gets a tryout in Northbrook, Ill. Present at the tank's dedication were (left to right): L. D. Suhr, consulting engineer; H. B. Horton, president, Chicago Bridge and Iron Company; Village Trustee John Hirschmann; and Mayor Charles Chaplin.

Discount Instead of Penalty Gets Bills Paid Promptly

THE City of Auburn, Wash. (population 6,500), installed an Underwood Sundstrand accounting machine in 1952 to help speed billing of water, sewer, and garbage charges. The working and success of the new system was described on page 151 of THE AMERICAN CITY for January 1953. One of the post card bills was reproduced in that January article.

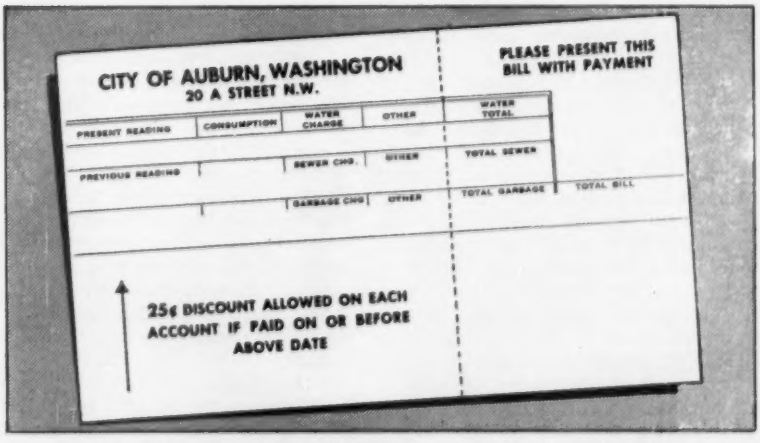
On the face of the bill, under the charges, was this legend: "25c discount allowed on each account if paid on or before (date due)." This legend has had a strong influence in getting our utility bills paid promptly.

The city formerly charged a penalty of 25 cents if the account wasn't paid by a certain date, and my own personal experience in those days as a paying customer on the other side of the counter was a slight feeling of resentment against the city when I slipped by the penalty date by a day or two and was "nicked" the extra charge.

Now when the customer comes in on or before the discount date he feels that he is saving 75 cents (25 cents on water, sewer and garbage accounts). If he does slide by the discount date he feels more resentment against himself than against the city for losing this savings.

I am sure that the discount method of billing appreciably decreases payment delinquency as we find that 20% to 25% of the bills are paid within 3 or 4 days after the mailing date. It also reduces the need of second and third notices. Where the lady of the house pays the bills there is less delinquency, as the fair sex seems more economy-minded than the male.

JAMES T. SKRIVAN
City Treasurer
Auburn, Wash.



Machine-written post-card bill bearing incentive-discount offer.

More Letters to the Editor

(*See also Mail Bag, pages 5 and 7*)

Comments on "Subdivision Redesign Pays Off"

To the Editor of THE AMERICAN CITY:

The article, "Subdivision Redesign Pays Off in Los Angeles," as noted in your September issue [pages 102-103], will undoubtedly influence the pattern of growth for many cities not already following a similar standard of planning. The subtitle, "City's design experts provide savings to taxpayers and developers" is not entirely convincing.

Most early American cities, laid out by sound-thinking surveyors and engineers, before the day of experts, follow the well-known grid pattern. The grid pattern served pedestrians, horse and buggy, and then the automobile, without too much confusion or excessive circular movement. The grid pattern also was found to lend itself economically to the laying of water mains, sewers, conduit, and underground transportation. The pattern grew with the towns and kept them coordinated. As the volume of vehicular traffic increased, the same "old-fashioned" grid pattern proved that it could be adapted to one-way streets in alternate movement without too seriously inconveniencing the citizens. Where certain wide streets were ordained in the grid pattern, they were designated for transient traffic to accommodate the long-distance traveler. The secondary streets, however, continued as through thoroughfares for local traffic and, without appearing too crowded, carry from 50% to 75% of the crosstown load in most cities fortunate enough to have the grid pattern within the old city limits.

Inadequate Arteries for Through Travel

A growth of real estate promoted developments under the new system, conforming to the text of your article, which is followed in a good many cities, is leading more and more traffic into a grossly inadequate number of continuous travel arteries. The cost of condemnation and construction of new "thru" relief highways is not prorated to the cost of the many subdivisions of the type the article promotes, all of which have played a big part in forcing such superhighway planning.

The article deals only with traffic in a small area, without consideration of the increased cost to construct utilities into these zigzag, circular, and dead-end community guild patterns.

There is evidence that back in the Colonial days there existed the same controversial problem. Certain of our leading cities were laid out in radial and meandering patterns which haunt many an experienced traveler today and which have cost the taxpayers many extra millions to overcome obstacles not encountered with the grid system. Why do we repeat the errors in 1954?

"The Experts Forget"

The experts forget that local residential communities frequently grow into business centers over a period of 50 to 100 years, in spite of zoning regulations. They also forget that while a single subdivision may be at the edge of town this year, that 50 other uncoordinated subdivisions will stack up behind it over the next 100 years, all loading traffic, procuring water and electricity, and discharging sewage into a few overloaded trunk arteries which become the life-lines of their existence. When these arteries become overloaded, do the subdivision planners and "community experts" accept the additional condemnation and construction costs which they have blindly created? The answer is obvious that a good many planners are becoming short-range thinkers.

In the matter of civilian defense and mass evacuation there has been even less thinking. It was relatively easy to drain a city planned in the grid system, except those bottle-necked with water crossings. Today, however, there isn't a chance to drain a grid-system city surrounded and bottle-necked with a series of self-contained residential developments which pour their population to only a few outbound streets.

Somewhere along the line sound thinking and a proved grid pattern was pushed off the track by long-hair, short-sighted experts who are costing the taxpayers millions in their backwash.

Perhaps the answer lays in re-adopting the grid pattern on half-mile or mile centers with 150-foot streets, and let the "new look" experts fill in the quadrants, as the developers desire, for sales appeal.

JOSEPH G. CONRATH
Conrath & Powell, Engineers
Erie, Pa

Los Angeles Rebuttal

To the Editor of THE AMERICAN CITY:

Upon reading Joseph G. Conrath's letter, it appears that he is under a misconception in respect to the use of modern subdivision design in the planning of our cities and communities. He seems to be under the impression that the new subdivision pattern of local streets would almost completely displace and eliminate the major through-traffic-carrying streets. This, of course, is an erroneous interpretation. The final paragraph of his letter reads, "Perhaps the answer lies in readopting the grid pattern on half-mile or mile centers with 150-foot streets and let the 'new look' experts fill in the quadrants, as the developers desire, for sales appeal." Actually, that is almost the exact procedure in effect in Los Angeles.

The city has an officially adopted Master Plan of Highways which provides for a system of major thoroughfares on the so-called "grid pattern," at half-mile intervals, and a comprehensive system of freeways to carry through traffic and by-pass the more congested districts of the city. The new subdivisions of modern design with curvilinear streets and cul-de-sacs are fitted into this system of highways, creating a more or less mosaic pattern. Hence, the method which has been employed for years in Los Angeles conforms substantially to the very plan recommended by Mr. Conrath. In this respect, there is no disagreement between the engineer and the city planner.

However, we can hardly pass over without comment some of the other remarks in Mr. Conrath's letter, condemning modern subdivision design, and criticizing the "new look" experts.

First, there is the matter of the grid pattern vs. modern subdivision design. Mr. Conrath extols the virtues and advantages of the grid pat-

tern. He in effect states the system worked in the past; therefore, why isn't it the best method at present? He claims certain economies in the installation of utilities. He boasts of the large traffic-carrying potential of the streets composing the grid pattern. He blames the modern-type subdivisions for increased traffic congestion resulting in the need to build superhighways or freeways.

What he forgot to say, however, was:

I

Why has the modern-type subdivision become so popular throughout the country? Certainly it's not because the planners have foisted it upon the people. On the contrary, it's the people and the subdividers who have demanded a more attractive environment than provided by the monotonous layout of the grid pattern. Both the planners and the subdividers have cooperated in catering to this general demand for better living conditions with added privacy. Proof of the advisability of the modern technique is evident in that similar subdivisions are now existent all over the United States, many of which were developed years ago.

Who should rightfully make the choice as to the type of environment in which people should live . . . the engineer or the people themselves? Personally, we side with the people. The fact that the grid pattern districts of Los Angeles are losing population to the newly created subdivisions is just an added indication that the public prefers the modern design.

II

The tremendous increase in traffic in most cities is not related to subdivision patterns, but rather to the growth in population and the steadily increasing number of motor vehicles on the highways. Spreading this traffic on all streets, including local residential streets, is hardly the logical solution to this problem.

Residents don't want heavy traffic through the neighborhood. They much prefer having the strategically located major traffic arteries carry such through traffic, thereby greatly reducing traffic hazards and making the neighborhood safer, cleaner, healthier, more quiet, stable, and desirable for children and grown-ups alike.

III

Through the discouragement of through traffic on local residential streets, narrower and less expensive street pavements are possible, thus effecting considerable savings in the street construction costs. In many instances, there are likewise substantial savings in linear footage of streets required, through the use of modern subdivision design. The savings in street construction costs will generally more than offset any greater cost in the installation of sewers, water mains, or other utilities. (It is questionable whether there generally is any greater expense in such instances, as claimed by Mr. Conrath.)

IV

An exclusive grid pattern creates an excessive number of intersections along major thoroughfares. Through modern design principles, many such intersections can be eliminated and those remaining can be properly spaced for signal controls. In this manner, the safety factor along the major highways is increased, and traffic flows with fewer interruptions.

V

The fear that local residential communities may grow into commercial or business centers is one of the most impelling reasons for favoring the modern-designed subdivisions. The uncontrolled spread of commercial and industrial uses into residential neighborhoods is exactly what modern city planning is trying to forestall through the designing and development of attractive, stable neighborhoods that will continue to exist as residential communities and to discourage the introduction of commerce or industry except in specified locations designated for the purpose. Lack of planning in the past is one of the primary reasons that former desirable neighborhoods have deteriorated and even disintegrated to their present sorry condition.

As for new commercial areas to meet the demands of the increasing population, development of the planned shopping center in an appropriate location in relation to other land uses is the new trend, and the intelligent answer to the commercial shoestrings which have developed in the past.

VI

Mr. Conrath writes: "They [the experts] also forget that while a single subdivision may be at the edge of the town this year, fifty other uncoordinated subdivisions will stack up behind it over the next hundred years, all loading traffic, procuring water and electricity, and discharging sewage into a few overloaded trunk arteries which become the life lines of their existence." In reply to this rash statement, we can assume that with proper subdivision control the subdivisions of the future will be *coordinated* with the land-use pattern of the city, rather than "uncoordinated." Furthermore, the overloading of highways and utility lines has no bearing on whether the street system is entirely of the grid or the modern-design subdivisions. Such overloading could occur with equal possibility under either plan.

VII

In respect to the alleged greater difficulty in mass evacuation in case of emergency, there is still a question whether such a procedure is even practicable in view of the potent weapons presently available. However, granting that it might be desirable under certain conditions, the chances are it would be far simpler to move traffic along the signal-controlled major highways, rather than along other streets with uncontrolled intersections comprising the grid pattern. Furthermore, if cities must be planned primarily for emergency evacuation rather than for good living, city planners may as well give up their profession and seek other fields to conquer.

In conclusion, the remarks of Mr. Conrath represent the viewpoint of many (not all, for sure) engineers. He sees things exclusively in terms of physical and mechanical problems. The planner, in contrast, must not only keep in mind the point of view of the engineer, but he must also consider each problem from the standpoint of the architect, the economist, and the sociologist. The human values, the consideration of the wishes of the people for whom the community is being planned, are the principal factors influencing the planner's ultimate decisions. Planners have the objective of guiding the growth of cities to make them increasingly better places in which to live and work. As such, they are ever striving to improve existing conditions, even though it may require a departure from the "horse and buggy" days.

CHARLES B. BENNETT
Director of Planning
CARLTON BLOCK
Planning Analyst
City of Los Angeles, Calif.

Meeting Parking Needs Without Public Funds

THOSE readers of THE AMERICAN CITY interested in off-street parking problems who have read the article in the September edition on how "Winston-Salem Turned a Fumble Into a Touchdown" [pages 127, 129], may be wondering how it all came out.

The story concerned an offer of R. J. Reynolds to tear down a block of buildings he owns in the midst of Winston-Salem's business district and to build on the site a modern multideck parking center. However, Winston-Salem objected to the fact that this offer was made contingent upon the willingness of the city to operate the parking facility after it was built. Rather than force a showdown in the city's Board of Aldermen, Mr. Reynolds asked that his proposal be kept on ice.

At this juncture, private interests offered to build the required parking at their own expense—as reported in the September article.

But that isn't all. Mr. Reynolds has now decided to do the whole job himself, and to lease the parking center to a private outfit when it is completed.

So Winston-Salem has met parking deficiencies noted early this year, and has done it without the financial support of the municipal government.

ALFRED G. IVEY
Associate Editor
Winston-Salem Journal and Sentinel

VEON*

the instant setting line
outlasts paint 5 to 1...
allows immediate
traffic passage

Now you can discard the troublesome, outmoded, and costly method of applying cross-walks with paint, discs, buttons or slabs!

VEON is the modern, trouble-free and economical permanent line that solves all your cross-walk problems.

VEON offers an immediate, lasting remedy . . . because lines of ready-prepared **VEON** compound set within a normal 90 second traffic-light cycle . . . never smudge, and maintain their clear, brilliant color (white, yellow, red) under the heaviest traffic. And what's more . . . **VEON** is applied as easily as ordinary paint by a single operator.

VEON lines at busy metropolitan intersections, under an actual traffic load of thousands of cars daily, offer impressive traffic-tested proof of **VEON**'s superiority.

Best of all, **VEON** cuts mounting manpower and maintenance costs ***without requiring any capital budget outlay!*** Let us show you how!

A free demonstration of **VEON** on your busiest intersection is yours for the asking. Prove to yourself the superiority of **VEON** under *your* local conditions, as so many traffic engineers have done throughout the country.

VEON *is available through your regular distribution sources.*

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VEON CHEMICAL CORPORATION

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*TRADE MARK

Traffic Control

By LESLIE WILLIAMS
Traffic and Planning Consultant
Philadelphia, Pa.

WANTED in Memphis, Tenn.

More People and Fewer Cars Downtown

TRANSIT riding in Memphis, Tenn., which rose from a pre-war 42,000,000 to a war-time peak of 91,000,000, has now dropped to 58,000,000 per year. The phenomenal increase of population has kept transit passenger volume above 1941 levels. The number of rides per capita, however, is only 133 today compared with 142 in 1941. This is a significant figure.

The transit system in Memphis in 1941 handled 42,000,000 annual riders on 115 miles of route in a 48-square-mile city area with a population of 300,000. Currently, it is handling 58,000,000 passengers per year on 185 miles of route in a 74-square-mile city area with a population of 438,000.

The interests of downtown Memphis are not limited by political boundaries. Downtown Memphis is concerned with the entire population of 505,000 within a 10-mile radius of Main Street. Within a five-mile radius there are 305,000 people, largely within the corporate limits of Memphis. In the 5- to 10-mile radius there are 200,000 people, of whom 140,000 are in the City of Memphis, 40,000 in Shelby County outside Memphis, and 20,000 in Crittenden County, Ark.

Transit to Downtown Memphis

Thirteen of the 20 public transit routes serving the city are radial routes that lead from the outskirts of the city directly into and through the business district. These carry 85% of all the passengers. The other seven routes are made up of three cross-town routes and four feeder routes.

Speed of public transit is a most important factor in the cost of transit operations. Savings can be considerable to the transit company. The Capital Transit Company in Washington estimated that it could save over $1,000,000 a year if the average vehicle speeds all over the system could be increased one mile per hour.

Present local transit speeds in Memphis—11 mph—while comparable with those in other cities offer little inducement to motorists to leave their cars at home and travel to the downtown area by transit.

Expressway Bus Operations

Operation of express buses over new express highways offers possibilities for express transit service for cities the size of Memphis. Pittsburgh now operates three express bus routes over the Penn-Lincoln Parkway into its downtown Golden Triangle, which saves 15-20 minutes to persons formerly using transit operating as a local stop basis on ordinary city streets.

Memphis can expect a limited mileage of express-type streets tapping its *major radial highways which now funnel a high percentage of through traffic onto congested north-south center city streets.* Such express-type streets should form a belt close or adjacent to the downtown so that buses could feed onto these express streets in outlying areas and travel express into the downtown with a minimum use of local streets..... The downtown of Memphis is in need of two belt thoroughfares. A minimum mileage of express street is a must for the future stabilization of downtown Memphis to *bypass through traffic and to speed up transit operations.* At present there are too many vehicles on intown streets and too little intown street space to handle them without undue and unnecessary delays.

Park and Ride

Park-and-ride is being advocated as a means of alleviating downtown traffic congestion in large cities. The purpose is to meet a demand of motorists wishing to drive part way to the downtown, park their cars and go the rest of the way by transit conveniently, comfortably, expeditiously, and at an acceptable charge.

The express-bus-type of park-and-ride, with parking lots situated in outlying areas, is quite popular in large cities and has promise of worthwhile expansion in medium-size cities, if approached through the coordinated efforts of local parking and transit operators. Opportunities for park-and-ride should be provided in the new expressways.

One phase of park-and-ride service, the extent of which we do not know, is that of motorists who drive their cars into mid-town areas, park at the curb, and then take the regular local bus service into the downtown.

Another type of park-and-ride is that known as downtown fringe parking combined with shuttle-bus service within the downtown area. This type of coordinated bus and parking comes in several varieties:

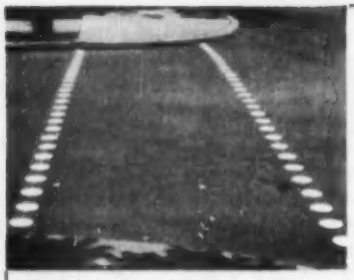
1. Direct shuttle-bus service between one perimeter parking lot and one downtown department store generally on a charter basis, as tried in Atlanta and Dallas.
2. Shuttle-bus service through the downtown section connecting large fringe parking lots at each end, but also serving as a regular downtown shuttle, as in Cleveland.
3. Special shuttle loop service within the downtown area run-

TAKE THE BITE OUT OF MARKING COSTS!

with

PRISMO

MUNICIPAL *Life Line*



APPLIED IN MINUTES . . . LASTS FOR YEARS!

PRISMO PLASTIX

Eliminate long and frequent traffic tie-ups with long-wearing . . . easy to apply Plastix—the modern way of applying safety to streets and highways. Prismo Plastix is an extruded plastic thoroughly impregnated with Prismo optical glass spheres. The high reflectivity of Plastix plus its economy and speedy application makes it ideal for highways, streets, parking lots, factory floors, etc. Write today for booklet PX-53.

Don't let high costs of marking materials keep increased safety from *your* streets! Take the bite out of these costs by using Prismo's Municipal LifeLine. This economical and highly durable marking material was developed by Prismo Laboratories specifically for marking city streets. Applied quickly, it dries quickly . . . reduces traffic tie-ups to an absolute minimum. Initial low cost of Municipal LifeLine plus lasting durability means tremendous saving in labor and material . . . means real economy for your city's marking program. Municipal LifeLine is the answer to municipal marking problems because it is the one reflective striping material that meets all municipal requirements. Write today for full details.

PRISMO SAFETY CORPORATION

The SPHERE of SAFETY

530 HUNTINGDON • PENNSYLVANIA

ning on a regular schedule and tapping several or a series of fringe parking lots and feeding the main retail and business establishments, as in St. Louis, Mo., and Toronto, Canada.

The size of a downtown area is an important factor in supporting frequent shuttle-bus service. Short-haul passengers must be heavy in both directions to prove successful. This type of shuttle service is hardly for cities with populations under 500,000. The principle, however, of parking before entering the business district is sound and is recommended for cities of all sizes.

Reflectorized Plates for Bike Riders

DALLAS, TEXAS, has adopted reflectorized bicycle license plates following a successful two-year test period. The city is the first metropolitan area to apply reflective sheeting to its bicycle plates to make bicycles and their youthful riders visible after dark.

The reflectorized plates have made nighttime bicycle riding safer and have added an extra inducement to youthful bike owners to register their vehicles. (Registration is compulsory, but getting youngsters to register with a minimum of official strain is another matter.)

Instead of a yearly registration fee of 50 cents, the plates were valid for two years at a cost of 75 cents. Because the durability of the plates has allowed a two-year registration period, time and cost of administering the program has been cut in half. Dallas traffic officials indicate that the cost of the reflectorization is little more than that of nonreflectorized plates, and is more than offset by the 75-cent fee for two-year registration.

The owners mount the reflectorized plates on the rear of their bicycles. At night the plates pick up headlight beams as soon as the lights reach the bike—often more than a block away—before the dim outline of the bicycle and rider is visible.

JOE J. MURRAY, *Director*
Traffic Safety Education
Dallas, Texas

Right Shoulder Lines

Right shoulder lines on Merrit Parkway in Connecticut.

A NEW traffic line—a right shoulder line proposed by Dr. J. V. N. Dorr after extensive road testing by the Connecticut State Highway Department—will be a permanent feature of Connecticut's Merritt Parkway.

The decision to paint this state road with right shoulder markers was taken after more than six months of road study on four miles of the Merritt Parkway. Placing the line *at* the edge of the pavement tended to produce uniformity of speed. Placing the line 18 inches *off* the edge of the pavement resulted in a greater sense of driver security, with motorists driving closer to the outer edge of the pavement.

A Critical Look at Freeways to Downtown Areas

NOTHING seems quite so dear to the heart of planners as the picture, real or imaginary, of magnificent freeways cutting through a maze of city buildings (often at several levels), stretching from rural-urban fringe areas to the city's very heart.

The fact that freeways have been built, and still are coming off the draftsman's table and are in the process of construction, permits the inference that it is more important to move traffic, much of which is made up of passenger cars with single occupants who live outside of the city, than it is to spend such monies in redevelopment projects within the city.

In my opinion, the problems involving the suburbs which the metropolitan-area planner must face are intensified by the construction of the high-speed freeways. In a sense these freeways are new and shiny funnels, the spouts of which are placed in our already overfilled urban bottles. The creation of larger bottles in the form of more parking spaces will but serve as a vacuum to draw more cars through the funnels. As Mayor Frank Zeidler of Milwaukee has pointed out,* the suburbanite escapes the cost of supporting: ". . . the libraries, the museums, the parks, the extra police pro-

* Frank P. Zeidler, "Don't Fence Me In," in *Planning*, 1952 (Chicago, Ill.: American Society of Planning Officials, 1952), p. 51.

Talk about meter

LIFE EXPECTANCY!

LIKE low maintenance, the true life of parking meters is a matter of first importance to budget-conscious community officials. Why? Because *long-lived* meters mean *more net revenue dollars* that can be allocated to relieving traffic and parking problems.

We'll let these facts speak for themselves . . .

According to a recent nation-wide study, meter life averages *less than 10 years!*

But 46% of all Dual meters installed *before* 1943 *are still in operation!*

This year, 2042 Duals celebrate their *18th birthday!*

75% of all Dual meters installed 'way back in 1937 are *still* operating!

And there's plenty *more* proof that Duals are your best choice for on-street or off-street use . . . for *any* parking requirement! Write today for helpful bulletins on SINGLE or DUBL-DUAL meters. Write to *The Dual Parking Meter Company* (Subsidiary of The Union Metal Manufacturing Co.), *Canton 2, Ohio.*

For extra value get **DUAL**
PARKING METERS

tection, the super highways, the special bridges, and the good roads, and the parking lots which a metropolitan area needs . . . [as well as] . . . servicing tax free institutions which are not especially welcome in the suburbs."

How was the decision made to go ahead with the construction, at tremendous cost to the public, of these urban-bound raceways? Is it likely that an informed taxpayer of the city would spend monies in these astronomical proportions for projects which benefit, almost exclusively, those who live outside of the city? I know of no evidence that the city dwellers themselves would ever have initiated the movement for such highways. A more likely picture of what happens is that illustrated by one committee urging the building of such freeways. Of this 14-man committee, 13 were residents of suburbs.

RICHARD DEWEY, *Associate Professor*
Department of Sociology and Anthropology
University of Illinois
Urbana, Ill.

Flint, Mich., Paints 5-1/2 Miles Of Lane Lines Per Day

THE City of Flint, Mich., purchased a triple-line truck-towed striping machine from Wald Industries Inc., of Huntingdon, Pa., which was delivered July 14, 1954. Flint's size is 30 square miles; its estimated population, 177,000; and has over 300 miles of paved streets and 200 miles of unpaved streets. Center line and/or lane lines have been painted on approximately 125 of these miles.

Painting is done by a five-man crew comprised of a truck driver, a material man working from a truck bed, a paint-machine operator, an auxiliary or utility man, and a follow-up truck operator.

Work accomplished and the time involved will improve with experience. At present, the equipment paints 5½ miles of street per 8-hour day. This includes preparation time and clean-up time. We have two trained individuals capable of assembling and handling the paint machine. The paint quantity for a single solid line has averaged 17 gallons of paint to the mile, and approximately 7 to 8 pounds of beads per gallon of paint have been dispensed.

The Traffic Engineering Division of the Flint Police Department is gratified by the performance of this equipment and would highly recommend this Model 345 Wald Truck-O-Liner to any municipality having 25 miles or more to cover with center or lane lines.

The hand-operated marking machine of 5-gallon capacity just cannot be considered for any extensive painting program. One must have a powered unit. With ours, we have covered more miles of city streets in three days than we *ever* painted with a hand-pushed unit.

CAPT. HAROLD L. HICKMAN
Traffic Engineer, Flint, Mich.

The Wald Truck-O-Liner that has given Flint its biggest lane lining program is demonstrated to company and city officials.

Deflect that Through Traffic

WHAT happens to sales when a new highway is routed *around* a city's central business district?

Surprisingly enough, says the Chamber of Commerce of the United States, business usually benefits. The reason—traffic congestion is eased, making it simpler for customers to shop. Further, traffic bypasses syphon off through traffic which represents very little sales potential as compared with local traffic.

An example is the western extension of the Pennsylvania Turnpike opened in 1952. A number of towns bypassed by the new highway feared they would lose business. Some strongly opposed the project. But results have turned out almost uniformly good. Not only did business improve when bumper-to-bumper through traffic was routed around the towns, but the proximity of the new highway brought new industries which further boosted sales.

5-Hour Shopper Parking In Springfield, Ill.

AROUND the Square in downtown Springfield, Ill., we have five cents per half-hour meters with a limit of one hour for a car. On the fringes of the business district is one-hour parking at five cents. Magee-Hale 12-minute Park-O-Meters on corners permit persons to put a penny in a meter to make run-ins to pay bills and make quick purchases.

In the middle of these blocks where there are alleys, on all four corners of the alleys we have made loading zones; and it is mandatory that all merchandise being delivered in that block be delivered by truck from these loading zones. They are painted yellow and are designated by signs. This method is being put into effect in the entire area of five blocks by seven blocks.

Immediately on the outskirts of this area, a two-hour parking zone has been made for the person who has business downtown lasting for more than one hour. Around the fringes of the two-hour zone are our five-hour meters. This is a Shoppers' Zone with signs saying, "Five-hour parking for Shoppers' Convenience." These meters can take one nickel or five nickels. Our thought was that the Shopper can come downtown and buy a dress, or a suit, or visit the doctor's office, and not have to go back to move the car. This five-hour area of 18½ blocks is served by 305 Magee-Hale Park-O-Meters. Our total of 1,932 Park-O-Meters and Duals collected $141,033.50 in 1953.

HAROLD C. JOHNSON
Chief of Police, Springfield, Ill.

☆10 reasons for MI-CO's popularity!

1 Top revenue producer
2 Negligible maintenance
3 Quick servicing
4 Simplicity of construction
5 Structural ruggedness
6 Less down time
7 Operates in any climate
8 Long productive life
9 Low first cost
10 Endorsed by city officials, motorists and merchants

The performance records of MI-CO Parking Meters everywhere speak for themselves. All over this country and in several foreign lands it's the same story—MI-COs are giving a good account of themselves and living up to our claims.

MI-CO gives you a choice of two meters . . . the MI-CO Manual, or the original, time-tested MI-CO Twin Automatic. Both are veterans; both have enviable records for dependable operation and consistently high earnings.

If your parking meter plans call for a new installation, adding to your present setup, or replacing obsolete meters, it will certainly be to your advantage to find out what MI-CO has to offer. We'll be glad to send you complete information and operating records of MI-COs in operation everywhere.

MI-CO METERS, 231 Court St., Covington, Kentucky
Division of The Michaels Art Bronze Co., Inc.

MICHAELS PRODUCTS

Store Fronts
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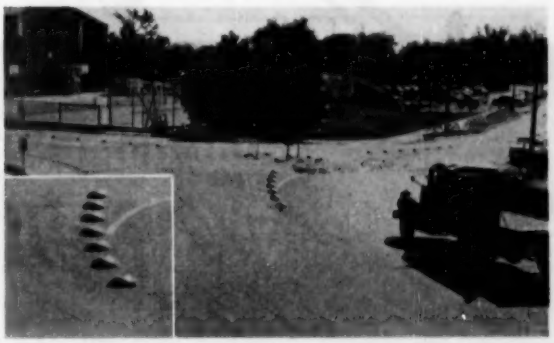
Kick and Push Plates
Push Bars
Thresholds
MI-CO Parking Meters
Museum Trophy Cases
Bronze and Aluminum Doors
Bank Screens and Partitions

14-Inch Reinforced Concrete Traffic Buttons for Wide Streets

BY LANE separations we have found it possible to control traffic on four very wide intersections in Boulder, Colo., that had given us trouble for years. The reinforced-concrete traffic buttons, shown in the accompanying photo, not only delineate the lanes but discourage motorists from driving over them. We make the buttons, using for molds reflectors from old-type street lights.

The buttons are 14 inches in diameter and 4 inches high. A ¾-inch pipe nipple, 4 inches long, provides a hole through the center of the button. They are set by pouring hot asphalt ½ inch thick on the pavement and embedding the button. A ½-inch by 10-inch lag screw is driven down through the center into the street pavement. Only a hard blow by truck wheels can dislodge the button thus secured to the pavement. We space the buttons 4 feet apart and keep them painted with traffic-yellow paint in order to make them more readily visible both during the day and at night.



A wide intersection in Boulder serviced by traffic buttons.

MYRON M. TEEGARDEN
Chief of Police and City Traffic Engineer
Boulder, Colo.

Here's Refined Way to Pay Traffic Fine

NORMAN, Okla., March 9 (AP)—Fuming drivers who wouldn't be caught dead—no less alive—in the police station to pay a parking fine have found salvation at last in the "traf-o-teria."

The little device, installed recently on all parking meters here as an experiment, gives Diogenes a life in his quest for an honest man. It turns potential non-parking-ticket-payers into law abiding citizens, and indications are it's going over big with the paying customers.

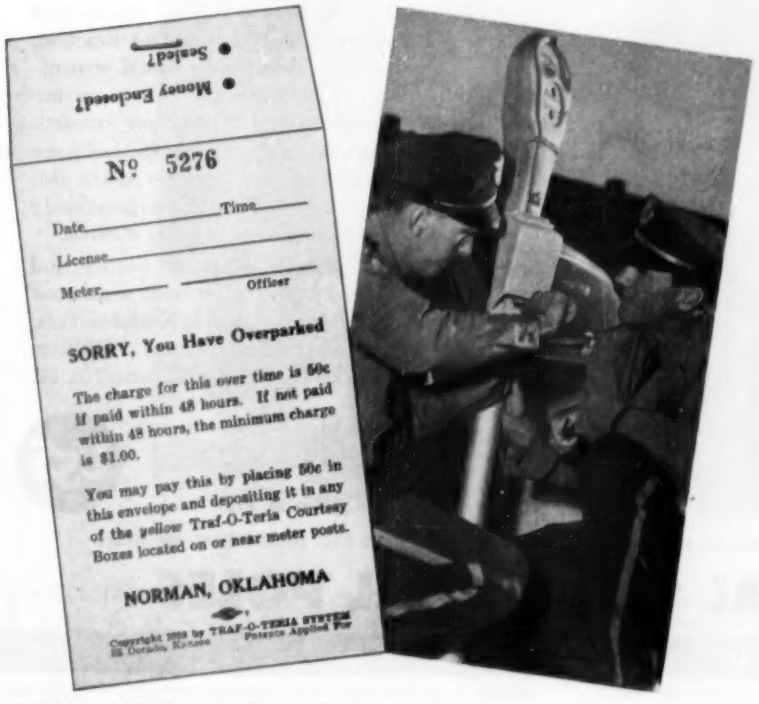
A motorist here receives a parking ticket and an envelope. If he puts the ticket and 50 cents into the envelope and places it in the traf-o-teria, an aluminum box attached to the parking meter, the fine is considered paid. Wait 48 hours and the ante goes up to $1.

Police Chief Dodd thinks the pay-as-you drive boxes will be a bonanza in enforcement of the city's traffic codes.

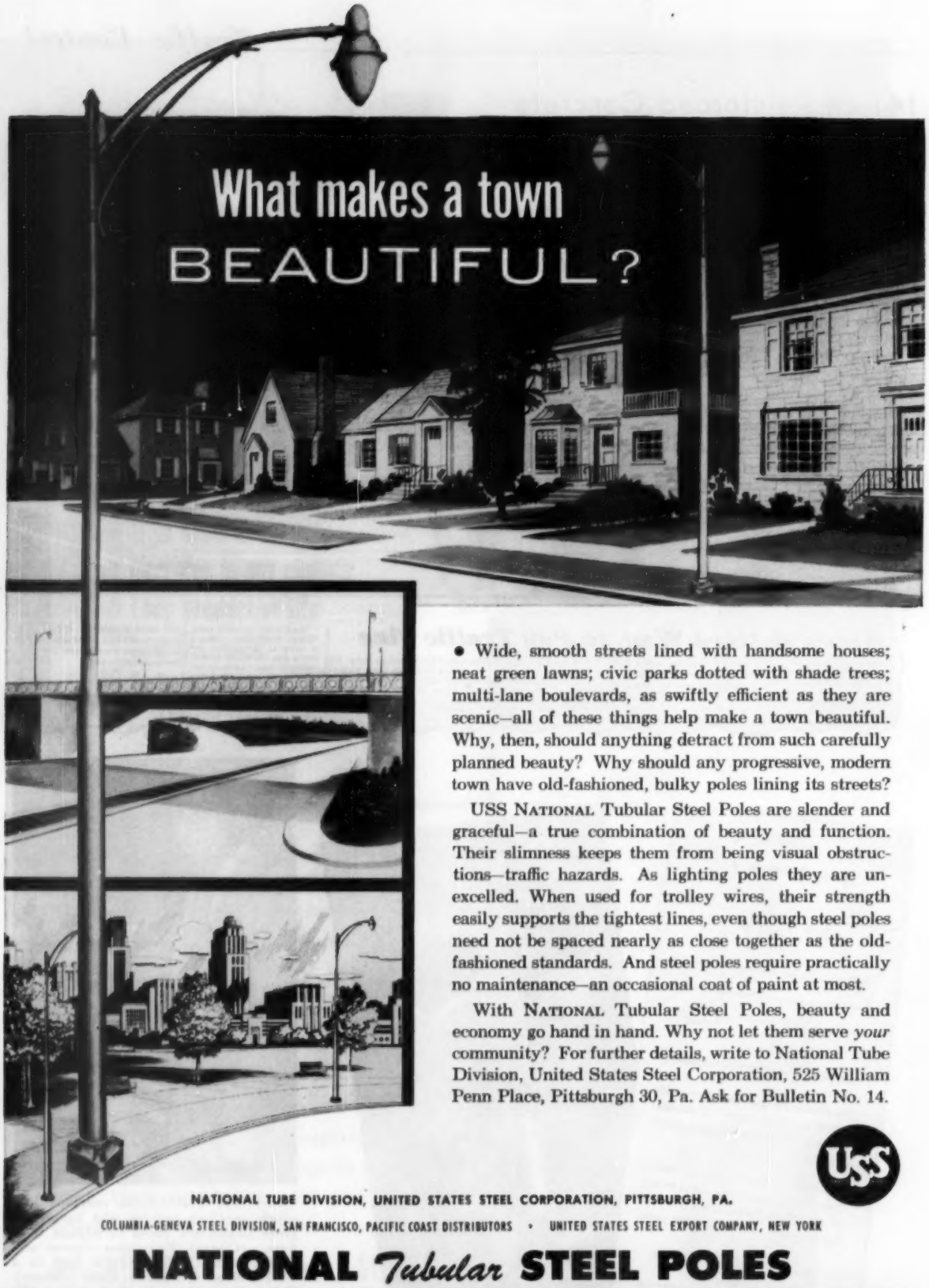
"Used to be," reflected Dodd, "women were pretty reluctant to come to the station, and they'd give the tickets to their husbands, who rhapsodes are, would forget to pay them. Now the women pay better than men."

Overtime parking fines collected in the boxes during the first month of "operation traf-o-teria," totaled $400, Dodd said, a 13% per cent increase over the previous month's take.

New York Journal-American
• Tues., March 9, 1954


Sealed?
Money Enclosed?
No. 5276
Date
Time
License
Meter
Officer
SORRY, You Have Overparked
The charge for this over time is 50c if paid within 48 hours. If not paid within 48 hours, the minimum charge is $1.00.
You may pay this by placing 50c in this envelope and depositing it in any of the yellow Traf-O-Teria Courtesy Boxes located on or near meter posts.
NORMAN, OKLAHOMA
Copyright 1953 by TRAF-O-TERIA SYSTEM
El Dorado, Kansas
Patents Applied For

(Left) The Traf-O-Teria envelope into which overtime parkers who have been given tickets are asked to deposit their fines. (Center) Patrolmen Grover and Costas install a Traf-O-Teria box on a Park-O-Meter in Norman, Okla. (Above) Police Chief Albert Dodd deposits a violation ticket. This system has increased fine collections by an average of 28%.



• Wide, smooth streets lined with handsome houses; neat green lawns; civic parks dotted with shade trees; multi-lane boulevards, as swiftly efficient as they are scenic—all of these things help make a town beautiful. Why, then, should anything detract from such carefully planned beauty? Why should any progressive, modern town have old-fashioned, bulky poles lining its streets?

USS NATIONAL Tubular Steel Poles are slender and graceful—a true combination of beauty and function. Their slimness keeps them from being visual obstructions—traffic hazards. As lighting poles they are unexcelled. When used for trolley wires, their strength easily supports the tightest lines, even though steel poles need not be spaced nearly as close together as the old-fashioned standards. And steel poles require practically no maintenance—an occasional coat of paint at most.

With NATIONAL Tubular Steel Poles, beauty and economy go hand in hand. Why not let them serve *your* community? For further details, write to National Tube Division, United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa. Ask for Bulletin No. 14.

USS

NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

NATIONAL *Tubular* STEEL POLES

UNITED STATES STEEL

Outdoor Lighting

Techniques and Developments in Lighting

May Eliminate Blackouts*

A PLAN to reduce "skyglow" has been developed by the Department of Defense in cooperation with the Federal Civil Defense Administration. This plan, known officially as CONILLUM, is designed to require the very minimum control of illumination to reduce this "skyglow" throughout the continental United States. Federal Civil Defense Administrator Val Peterson stated that: "At the request of the Department of Defense, the Federal Civil Defense Administration will undertake to implement skyglow control with the cooperation of state and local civil defense organizations."

For CONILLUM to be effective, certain commercial, industrial, and municipal preparations will have to be made. Outdoor advertising lights and exterior floodlights which contribute to skyglow would be restricted. Street lights would be shielded to reduce upward light. On well-lighted roadways, motor vehicles would be permitted to use parking lights only. Lower headlight beams would be permitted on unlighted and poorly lighted roadways.

By checking the location of skyglow from one city against that from another city and comparing their size, brilliance, and relationship, a navigator can fix his location on his map with greater certainty. CONILLUM will deny enemy navigators the use of this guide.

Detailed plans for local application will be worked out by the federal and state civil defense administrators. These plans, explaining how the individual can assist in the control of lighting, will be announced at a later date.

COL. BARNET W. BEERS, *Assistant for Civil Defense*
Washington, D. C.

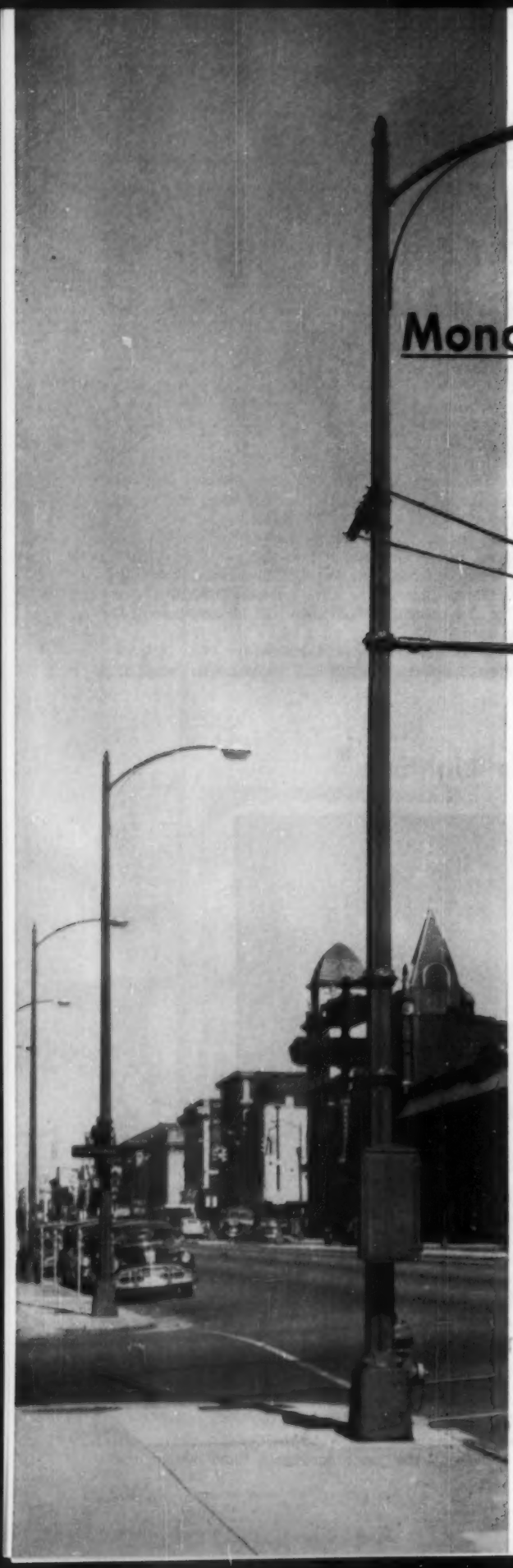
* Those titles which have been marked with an asterisk (*) on this and the following page represent excerpts from papers in *Illuminating Engineering* for September 1954.

Outdoor Decorative Lighting *

Christmas lighting in Bethlehem, Pa.

FORTUNATELY, the prosaic results so often produced by standard white floodlighting no longer represent the most economical and convenient form of revealing a subject by night; neither does the expensive use of color screens represent the only means of dramatizing and featuring effectively a subject by illumination.

The simplest form of decorative lighting—bare lamps or festoon strips—standard floodlights, the natural color of discharge sources, and new translucent plastic devices represent the basic mediums from which the



Monotubes can help you

clear the curb line

A CLEAN curb line, uncluttered by separate sets of poles for different services, contributes to improved visibility, greater safety, far better appearance. Cold rolled Monotube poles, exceptionally strong, ideally support combined services to accomplish this objective.

The Monotube shown here, for example, supports a street lighting luminaire, mast arm traffic signal, signal control box and two-way street signs.

Monotube poles, in various sizes and designs, are engineered to handle virtually any combination of services . . . reducing cost and maintenance. For complete information write to The Union Metal Manufacturing Co., Canton 5, Ohio.

UNION METAL

Monotube Lighting Poles

artist and the lighting engineer may create a symphony of light and color to reveal or transform almost any subject worthy of consideration.

Vapor lamps because of their high lumen per watt efficiency form an economical means of color floodlighting. Color effects include the greenish-blue color of mercury, the monochromatic yellow of sodium, red from a 400-watt 4-foot neon source, and from two 250-watt 4-foot mercury lamps light green and dark blue. The use of such lamps for lighting old buildings is appropriate as the color may enhance any defects or the natural discoloration of the masonry rather than emphasize them as is so often the case with white light.

Chrysaline is a new application of a plastic material which may be sprayed upon a form of almost any shape. The material forms a hard, weather-proof translucent shell which may be illuminated from within; color effects are produced by treating the material with lacquer or by the use of colored lamps. Such devices are invaluable when used in conjunction with bare lamps to create attractive displays and designs on the face of buildings unsuitable for standard floodlighting applications. They may also be used as illuminated motifs of a specific design appropriate to any occasion or event.

Festoon Lighting

Festoon lighting has been misapplied so often in the past that few people will consider its use today. However, together with the use of other features, it is often the only suitable medium for the effective treatment of open-type structures such as towers and bridges. Its application extends also to parks and gardens and to public thoroughfares. Correctly applied festoon lighting can produce most interesting and dramatic effects.

Any extensive program, and particularly those designed as a tourist attraction, should include static or animated "set pieces" or tableaux. The scope of design for such units is very extensive, and no hard and fast rules apply.

Suitable basic themes are varied; they may be topical, artistic, classical or humorous. Topical subjects, however, soon become dated; historical events may be appropriate for festivals and specific festive celebrations.

Considerable thought must be given to the size and shape of such features, particularly for spacious gardens or large open boardwalks. Otherwise, they may be dwarfed by the surroundings. Creative ideas and drawing-board impressions must be carefully checked and visualized with site conditions. Frequently, the units need to be considerably larger than at first visualized and careful thought should be given at the design stage to eliminate an unbalanced effect and costly modifications at a later date.

Invariably, light must be integrated with the use of drapes, bunting, garlands, structural elements, and any other artificial decorative media. It must also be used to the greatest advantage to enrich natural scenic beauty, gems of architecture, and specific permanent features.

Whatever the nature or size of the program, it is most essential that the basic design be in good taste because such features inevitably result in extensive publicity, intended or otherwise, and the reputation of the community concerned will benefit or suffer as a result.

R. A. Eshelby
Northern Electric Company
Montreal, Que., Canada

Street Lighting Developments Have Been Stimulated by Major Light Events*

MANY new lighting tools and techniques now considered commonplace were first introduced at a notable celebration, such as a World Fair, an Exposition, or a Jubilee.

The World's Columbian Exposition (1893) in Chicago is credited for the first mass use of decorative electric lighting, including external floodlighting of buildings and the embryonic beginning of multiple incandescent street lighting.

The Panama Pacific International Exposition (1915) at San Francisco was noted for the decorative treatment of street-lighting poles. A gradual transformation in street-lighting practices from carbon arcs and Welsbach gas mantles to low-wattage multiple incandescent lamps reached greatest acceptance about the time of the Sesqui-Centennial (Liberty Bell Celebration, 1926) in Philadelphia.

The application of refractors and prisms in conjunction with fairly large single ornamental lanterns was emphasized during the celebration of "Light's Golden Jubilee" (1929).

The 400-watt A-H1 mercury lamp was introduced for industrial lighting in this country at the "Century of Progress" celebration (1933) at Chicago. Certainly the effect of the fair at Chicago stimulated and made possible the relighting of State Street, the first ornamental street lighting application of incandescent lamps rated at over one kw.

Fluorescent Lighting

The World's Fairs at San Francisco and New York (1939-1940) introduced fluorescent lighting in this country for commercial and industrial applications. It was also used for spectacular decorative effects. Improved mercury lighting was used extensively for special floodlighting effects and for fountain displays. Treasure Island at San Francisco featured the use of colored fluorescent displays, and the San Francisco Bay Bridge is remembered for its sodium lighting.

These momentous occasions had their influence on street-lighting development and practices. It is anticipated that something new and revolutionary may follow the Diamond Jubilee Celebration at Atlantic City, N. J. The Jubilee commemorated the invention and perfection of the incandescent electric lamp.

About five years ago, the city officials and the management of the Atlantic City Electric Company decided to improve the street lighting in Atlantic City. They had in mind a plan that would increase property values, encourage civic pride, reduce accidents, and contain all the other intangible benefits of good street lighting.

The orderly sequence of the over-all lighting modernization plan was interrupted by the necessity of doing something outstanding for the Boardwalk in anticipation of the Diamond Jubilee Celebration, and particularly the 100th Anniversary of the founding of the city, which would attract many conventions to Atlantic City in 1954. This project was described in The Ameri-

* See reference note on preceding page.

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CAN CITY for July and August 1954. It was constructed to these eight basic requirements:

1. Average maintained illumination of 2.0 foot-candles minimum—which at once implied a source of at least 30,000 lumens initial output;
2. Yet with wider spacing of standards than at present—to lessen "picket fence" effect;
3. And with in-built provisions for future increase to 3-plus foot-candles without major changes to the system;
4. Illumination of color suited to the application—a wide pedestrian promenade with extraneous (color-correcting) light available, for the most part, only from the side opposite the luminaires.
5. Rugged, noncorrosive equipment—for minimum maintenance in spite of continuous exposure to salt atmosphere.
6. Equipment of low windage—to withstand storms of gale or even hurricane force;
7. A finished system epitomizing 75 years of progress in the lighting art;
8. And at comparable first cost.

The Diamond Jubilee Celebration at Atlantic City, in 1954, introduced the Golden White Fluorescent Mercury Lamp to outdoor applications. The acceptance of this new light source has already created a demand for similar lighting not only on roadways but particularly in parking areas associated with modern shopping centers.

W. EARLE HAWKINS
Atlantic City Electric Co., Atlantic City, N. J.
W. S. TILL
Westinghouse Electric Co., Bloomfield, N. J.
D. W. ROWTEN
Westinghouse Electric Corp., Cleveland, Ohio

"Giraffes" Trim Trees and Lights in Toronto

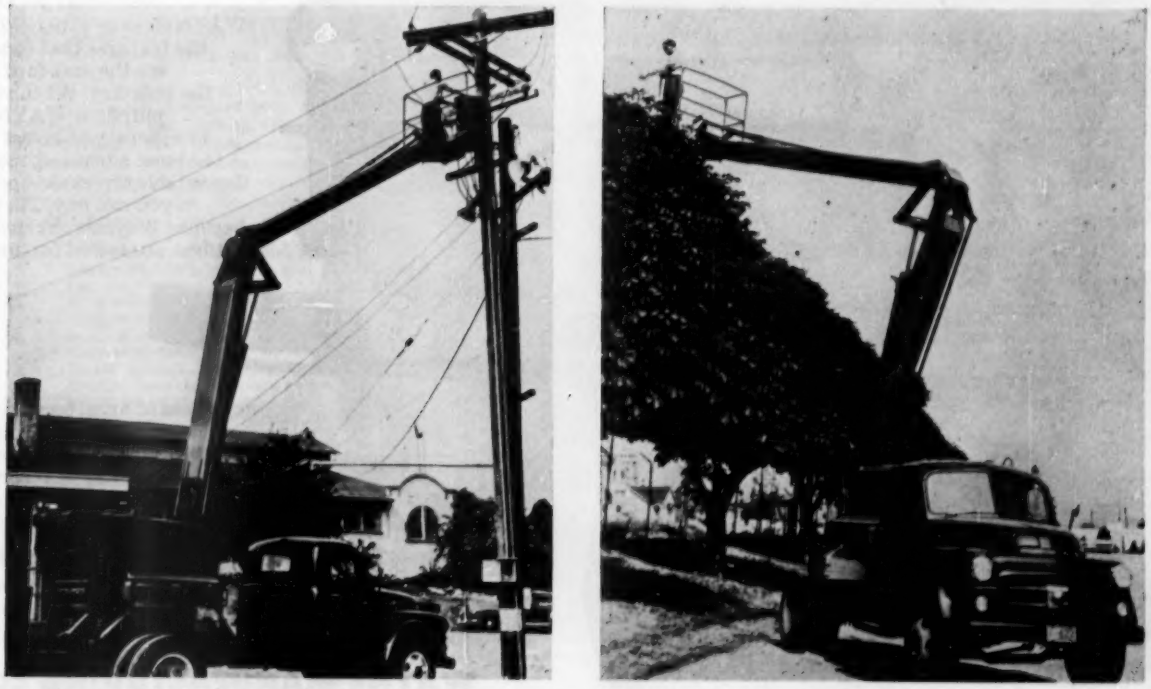
THIS is the Giraffe among special trucks for street-light and overhead line maintenance, tree trimming, and other up-in-the-air municipal operations. The aerial platform is hydraulically operated.

An interesting test of the efficiency of the machine was met in Toronto. In addition to tall street-lighting standards, there are many street trees in Ontario's capital. To service the lights, the trees had to be trimmed and this could be done only in the warmer months. A Giraffe with six men did the work of the usual eight-man crew in a third of the time. Parks Commissioner George Bell bought a second unit and two more have been ordered. This herd of Giraffes could do the biennial tree-trimming rather quickly and perform all routine maintenance tasks the rest of the time.

With a two-section boom that can put a workman 40 feet into the air. Giraffe can handle up to 450 pounds at any radius with no outriggers, 1,000 pounds with outriggers. The boom of the Giraffe can be rotated continuously in either direction and its two sections can be moved up or down independently or at the same time, thus affording enormous versatility of movement.

Insulation protects the upper end of the boom and platform against 7,500 volts. Seamless steel tubing in place of hose carries the hydraulic fluid. A pipe inside the boom transmits air power to the platform, and a tube serves as an electrical conduit.

Additional information on Giraffe may be obtained by writing to the Pitman Manufacturing Company, Room 587, 300 W. 79th Terrace, Kansas City 14, Mo., makers, also, of the Pitman Hydra-Lift.



This new service truck can reach up to 40 feet and service street lights or distribution wires (left) or trim a tree (right).

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Zoning and Planning Notes

Edited by NORMAN WILLIAMS, Jr.

Minimum Building Size Regulations—Sliding Scale

PENNSYLVANIA. *Appeal of Medinger*, 104 Atlantic (2d) 118 (Supreme Court, March 24, 1954).

In this case a couple had for twenty years been collecting authentic material to build "an early 1700 Colonial Bucks County farmhouse," and plans for this purpose had actually been drawn back in 1937. The proposed home would contain 1,125 square feet of habitable floor area, and would cost between $20,000 and $25,000. The plot of ground was within an "AA" residence district, in which the regulations required a minimum of 1,800 square feet of habitable floor area. The zoning ordinance contained a sliding scale of such minimum size regulations, with 1,400 square feet required in the next district, then 1,125, 1,000 and 1,000 for the successive residence districts. (These figures are all for two-story houses.) A special problem arose here from the difficulty of obtaining sufficient additional authentic material for a much larger (conforming) house.

As with several other recent Pennsylvania zoning decisions, the opinion started off with a long discussion, emphasizing the importance and sanctity of property rights.

> "There was no attempt or intent to measure the habitable area of a home by the number of persons that would occupy it, and there was no proof that the ordinance as drawn would protect or affect any one person's health and morals. Moreover, it is obvious that the ordinance does not materially (if at all) increase or decrease fire hazards and consequently it has no substantial and clearly necessary relation to safety. . . ."

It was also indicated that, while overcrowding might have an effect on health and morals, this ordinance was clearly not directed at that problem—partly because of the lack of any occupancy control, partly because of the existence of the sliding scale.

> "But if a 1,000-minimum habitable square feet is reasonable and proper for every home in one district and does not adversely affect the health, morals or safety of the occupants of such a house, 1,125 square feet of habitable floor area in a nearby house cannot adversely affect the health, morals or safety of that home or of that community."

While commending the community's desire to plan for both beauty and practicality and to conserve its property values, the Court held that the ordinance also could not be sustained on the broad ground of protecting "general welfare."

> "We, therefore, hold that neither esthetic reasons nor the conservation of property values or the stabilization of economic values in a township are, singly, or combined, sufficient to promote the health or the morals or the safety or the general welfare of the township or its inhabitants or property owners, within the meaning of the enabling Act of 1931, as amended, or under the Constitution of Pennsylvania. . . .
>
> "This ordinance flies in the face of our birthright of Liberty and our American Way of Life, and is interdicted by the Constitution."

The problems raised by the ordinances such as this have been repeatedly discussed in this column.* This opinion, while couched in the same terms as recent un-progressive Pennsylvania zoning opinions, at least recognized that such ordinances may be very arbitrary invasions of personal liberty, and (unlike the dissenters in the recent New Jersey case, discussed in the issues mentioned above) that the sliding-scale made the constitutional situation worse, not better.

The opinion is also notable for its recognition that minimum-building-size regulations cannot be seriously defended as measures against overcrowding if they do not contain any control over occupancy.

* See THE AMERICAN CITY for February, October, and November 1951.

Amusement Park in Commercial Districts

PENNSYLVANIA. *Shapiro* v. *Zoning Board of Adjustment*, 105 Atlantic (2d) 299 (Supreme Court, June 4, 1954).

In this case a "kiddie amusement park" was proposed on a 3-acre vacant tract in an "A" commercial district in northwest Philadelphia. The regulations for that district specifically permitted all uses permitted in any residential district; and the regulations for "D" residential districts permitted "Athletic or amusement parks." Well after the application had been filed, a zoning amendment was introduced to require proposed amusement parks in such a commercial district to obtain a permit from the board of adjustment; and passage of this amendment came after a court had ordered issuance of a permit for the proposed use. Moreover, the amendment actually specifically announced that it was concerned with stopping this particular establishment! When the city authorities moved to revoke the permit, the developer naturally argued that he had a vested right.

The Court decided that the unamended district regulation clearly authorized all types of amusement parks, without any limitation or exception.

> "The appellants seek to place an unwarranted limitation upon that term by contending that council intended by the ordinance to authorize only certain types of amusement parks in "D" residential districts. If such had been council's intent, it should have plainly so indicated by the ordinance. As the learned judge aptly observed for the Court below,—'Many kinds of amusement parks exist, e.g., purely recreational, solely musical, cultural, educational, literary, artistic, scenic, rest havens, and a host of others that may be conceived of, depending upon the education, training, disposition, desires, state in life, health, social position, age and sensibilities of those who patronize them, and they may be public or private. Surely no legislative body, in the absence of a clear and explicit expression of such an intention, should have imputed to it a mandate that children, or "kiddies," should be excluded from the benefits and pleasures enjoyed by their elders. The mere fact, therefore, that the proposed amusement park is designed primarily for the use of children under twelve years of age, and employing devices capable of accommodating those weighing a hundred pounds or less, does not destroy the character of the proposed use as an "amusement park".'"

Moreover, it was held that the permits remained valid and unimpaired, on the ground that the amendatory ordinance was not enacted till after the permits were ordered issued. It was also pointed out that expenses had in fact been incurred before passage of the amendment.

FRANK BACKUS WILLIAMS

1864-1954

The profession of planning and zoning law has lost a distinguished member, in the passing, on December 5, of Frank B. Williams, who from 1923 through 1946 edited for THE AMERICAN CITY this monthly department of Zoning and Planning Notes.

When, because of his advancing years, Mr. Williams relinquished this editorial task, THE AMERICAN CITY was fortunate in securing the services of Norman Williams, Jr.—not related to his predecessor—whose name, we hope will stand at the head of this page for many years to come.

Highway Cases

NEW YORK. *Alexander's Department Stores* v. *New York State Thruway Authority*, 127 New York Supplement (2d) 146 (Appellate Division, January 12, 1954).

NEW HAMPSHIRE. *Opinion of the Justices*, 105 Atlantic (2d) 924 (Supreme Court, June 15, 1954).

OHIO. *Ellis* v. *Ohio Turnpike Commission*, 120 North Eastern (2d) 719 (Supreme Court, June 30, 1954).

In the New York Thruway case, a department store in the Bronx brought a proceeding to annul the Thruway Authority's decision in laying out a route through Southern Yonkers, for the Southern Westchester Connection of the State Thruway system. However, the Court held that the Thruway Authority's decision "was within the scope of the governmental power and limit of discretion granted to them by statute," and, therefore, dismissed the action.

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Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Airports—Rescission of Contract by City on Breach by Operators—Value of Improvements

In action by City for cancellation and rescission of contract between city and operators of city-owned airport, held, in affirming judgment for city, that court of equity had jurisdiction to determine entire matter, including fixing of value of improvements to be acquired by city under option in contract, and that the court could fix the value of the improvements without regard to a provision in contract that value should be determined by arbitration. *Johnson* v. *City of Winter Haven*, 72 So. (2d) 808 (Fla., April 23, 1954). *Reh. den.* June 2, 1954.

Annexation by City of Part of Township Upheld

In action against city to enjoin annexation of part of Township to City of Kalamazoo, held that where plaintiffs had not contended, at hearing before county board, that petition for annexation was defective for failure to contain signatures of residents of City, objection would not be considered on appeal from judgment upholding annexation. *Kalamazoo Tp.* v. *Stamm*, 64 N. W. (2d) 595 (Mich., June 7, 1954).

City Council Member—Severance of Business Relation Before Bids Let—Vote on and Contract Valid

In taxpayer's action to have contract between City and contractor declared null and void because city alderman had been employee of contractor, held that where alderman resigned employment upon learning that employer contemplated submitting bid on city project, and subsequently took employment with contractor's son operating business unconnected with award of contract, and employment change was bona fide, alderman was not disqualified from participation in official capacity and contract accepted by city was not illegal. *Heffernen* v. *City of Green Bay*, 64 N. W. (2d) 216 (Wis., May 4, 1954).

City-State Road Tax Sharing Based on Population of Cities—Statute Invalid as Special Law

Where statute adopted pursuant to state constitution permitted allocation of road tax to cities and counties having population in excess of 175,000 persons for maintenance of public roads, streets and bridges, held that statute constituted special legislation and was void. *City of Little Rock* v. *Campbell*, 268 S. W. (2d) 386 (Ark., May 31, 1954).

Competitive Bidding—Police Vehicles—Acceptance of Higher Bid Because of Intended Use Upheld

In action to enjoin city from consummating purchase of ten automobiles for use of police department, held that evidence established that city acted properly and within its discretion in accepting bid for one make of automobile over another's even though a difference of $39 per vehicle existed in bids, since difference between vehicles for which bids were submitted in relation to intended use justified difference in price paid. *J. C. Lewis Motor Co., Inc.*, v. *Mayor, etc., of City of Savannah*, 82 S. E. (2d) 132 (Ga., May 11, 1954).

Golf Course — Injury from Golf Ball — Proprietary Function — City Liable

In action against city for injuries received when struck by golf ball in parking area of city-maintained golf course, held that city was acting in its proprietary capacity in operating golf course and therefore liable for negligence. *Plaza* v. *City of San Mateo*, 266 Pac. (2d) 523 (Cal. App., Feb. 8, 1954).

Licensing Ordinance—Provision on "New Business" Invalid—No Standards—Auctions

In action to set aside borough licensing ordinance as invalid, held that portion of ordinance relative to new business was wholly invalid where granting or denial of license was discretionary with borough council and it had no general rule of action or standard of conduct governing council in its determination. *Weiner* v. *Borough of Stratford*, 104 At. (2d) 659 (N. J., May 3, 1954).

Off-Street Parking Facilities Property Tax Exempt—Store and Business Uses Subject to Tax

In action by parking authority to enjoin assessment and levy of taxes and for decree declaring property tax exempt, held that parking authority property did not lose its tax-exempt status merely by reason of being leased to persons using such property as off-street parking facilities, even though a profit was derived from such operations, but that portion of property rented as restaurants, tailoring establishments, photography shop, flower shop, and electric protective agency, did lose its tax-exempt status. *Public Parking Authority of Pittsburgh* v. *Board of Property Assessment, Appeals and Review, Allegheny County*, 105 Atl. (2d) 165 (Pa., May 24, 1954).

Pinball Machines—City Must Prove Used for Gambling Purposes Before Confiscation and Destruction

In action by corporation engaged in selling, leasing, renting, operating, and exhibiting pinball machines for order enjoining city officers from seizing, confiscating and destroying such machines as gambling devices, held that machines, which offered opportunity for free game primarily based on skill of operator, so long as not used for gambling purposes, were not gambling devices per se merely because player may win right to play free game, and city was without power to seize and destroy such devices, unless and until it was proven they were used for gambling purposes. *Westerhause Com. Inc.*, v. *City of Cincinnati*, 119 N. E. (2d) 954 (Ohio Comm. Pleas, Hamilton Cty., July 21, 1953).

Policeman—Payment for Overtime Before Retirement Denied

In action by retired police officer to recover compensation for extra duty performed prior to retirement, held that under provisions of city charter and rules and regulations of police department enacted pursuant thereto, police officer who had not taken compensating time off for extra duty performed could not claim compensation therefor, and annual salary was payment in full for all of his services without regard to number of hours which he worked. *Pootel* v. *City and County of San Francisco*, 270 Pac. (2d) 553 (Cal. App., May 20, 1954).

Sewers—Death of City Employee From Defective Conditions—City Liable

In action against city for death of city employee allegedly resulting from fall while working in sewage booster station, and caused by defective condition of premises, held that maintenance and repair of sewers is proprietary function of city and city was liable for negligence in maintenance and repair and failure to keep premises free of defective conditions. *City of Altus* v. *Martin*, 268 Pac. (2d) 288 (Okla., Jan. 12, 1954). *Reh. den.* Mar. 23, 1954.

Streets—Subdivider Enjoined From Barricading—Adverse Use for Ten Years

In action by home rule city to enjoin property owner from obstructing street and to require him to remove barricades placed thereon by him, held that subdivider had acquiesced in land for use of street and that public had made adverse use of strip for more than ten years as required by statute and judgment for city would be affirmed. *Hynek* v. *City of San Angelo*, 278 S. W. (2d) 493 (Tex. Civ. App., May 19, 1954).

Tax Liens—Personal Property—City Taxes Priority Over Landlord's Lien

Where personal property was seized and sold at public sale under landlord's lien and privilege, held that City of New Orleans' personal property taxes on property due at time of seizure constituted lien and privilege on proceeds of sale prior to that of landlord. *Rosenthal* v. *Floor Coverings, Inc.*, 73 So. (2d) 30 (La., May 24, 1954). *Reh. den.* June 21, 1954.

Transit Fares—Charge As Operating Expense of Retired Street Cars Upheld

Where state commission permitted city bus company to charge as operating expense, one-half of depreciated value of retired street cars, amortized over period of ten years and trial court allowed such charge insofar as company had made savings on its income taxes, and there was no showing made that public had suffered substantial injury, held that even though such expense was not normally permissible, the temporare fare allowed should not be set aside on account thereof. *Application of St. Paul City Ry. Co.*, 64 N. W. (2d) 487 (Minn., May 14, 1954).

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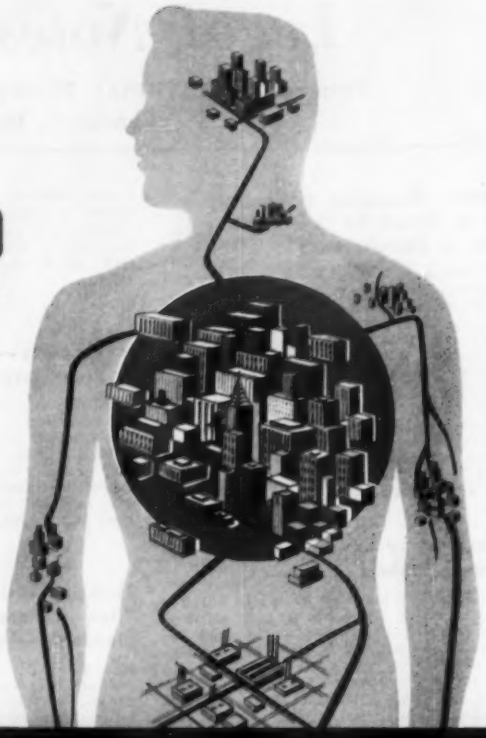

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City Manager Appointments and News

The following portraits are of city managers whose appointments have been announced in preceding issues of *The American City*

Dewey C. Brown, Jr.
Avondale Estates, Ga.

John J. McCarthy
Toledo, Ohio

L. A. Hanson
Cadillac, Mich.

Ralph Pfiffner
Corona, Calif.

Norman Blacher
Sea Gate, N. Y.

H. MAXWELL DAVENPORT, former manager of Cadillac, Mich., suceeded William H. Lange as city manager of Marysville, Mich.

The first manager of Greenwich, Conn., is the former Chief of Police, JOHN M. GLEASON.

Holland, Mich., appointed HERB H. HOLT of the Wisconsin Public Expenditure Survey, to succeed H. C. McClintock as city manager.

LEVIN D. JAMES, former manager of Hampton, Va., was appointed city manager of Hopewell, Va., succeeding R. Thomas Hobbs.

Succeeding Evan E. Peterson as city manager of Bellevue, Wash., is W. W. KENNEDY, the assistant manager of Pittsburg, Kans.

Ashland, Pa., appointed the secretary of the council, FRANKLIN L. LANE, to succeed H. L. Burmeister as borough manager.

IRVING G. MCNAYR, former manager of Montgomery County, Md., was appointed city manager of Springfield, Mo., succeeding William E. Hansen.

Rockville, Md., appointed the assistant manager and city engineer, JOHN H. MARKLAND, city manager, succeeding J. G. McDonald.

The first manager of Maryville, Mo., is ROBERT PEART, city manager of Garden City, Kans.

THEODORE E. RIDLEY, former manager of Rochelle, Ill., was appointed first city manager of Inkster, Mich.

Manhattan Beach, Calif., appointed LELAND M. SWANSON, manager of The Dalles, Ore., to succeed Clifford G. Petrie as city manager.

DONALD P. ZIEMKE, assistant engineer at Benton Harbor, Mich., was appointed city manager of Saint Louis, Mich., succeeding James R. Burch.

CLARENCE E. RIDLEY
Director
International City Managers' Association

City Managers Hold Annual Conference

WITH 785 managers, wives, and guests in attendance, the members of the International City Managers' Association gathered at St. Petersburg, Fla., from December 5-8 to hold their fortieth and largest annual convention. Cities and towns in forty states, Alaska, and Canada, were represented by managers who focused their attention on topics ranging from trends in personnel practices, problems of municipal finance and local planning, to the provision of services to fringe areas around cities and towns, police and fire department problems, and techniques of good city management.

In discussing personnel trends, the ICMA members heard Edmond F. Ricketts, Public Administration Service consultant, predict a bigger role in the future for municipal employees in deciding local personnel policies. Mr. Ricketts also predicted a continuation of the present trend toward higher wages, shorter working hours, and more fringe benefits for employees in cities and towns.

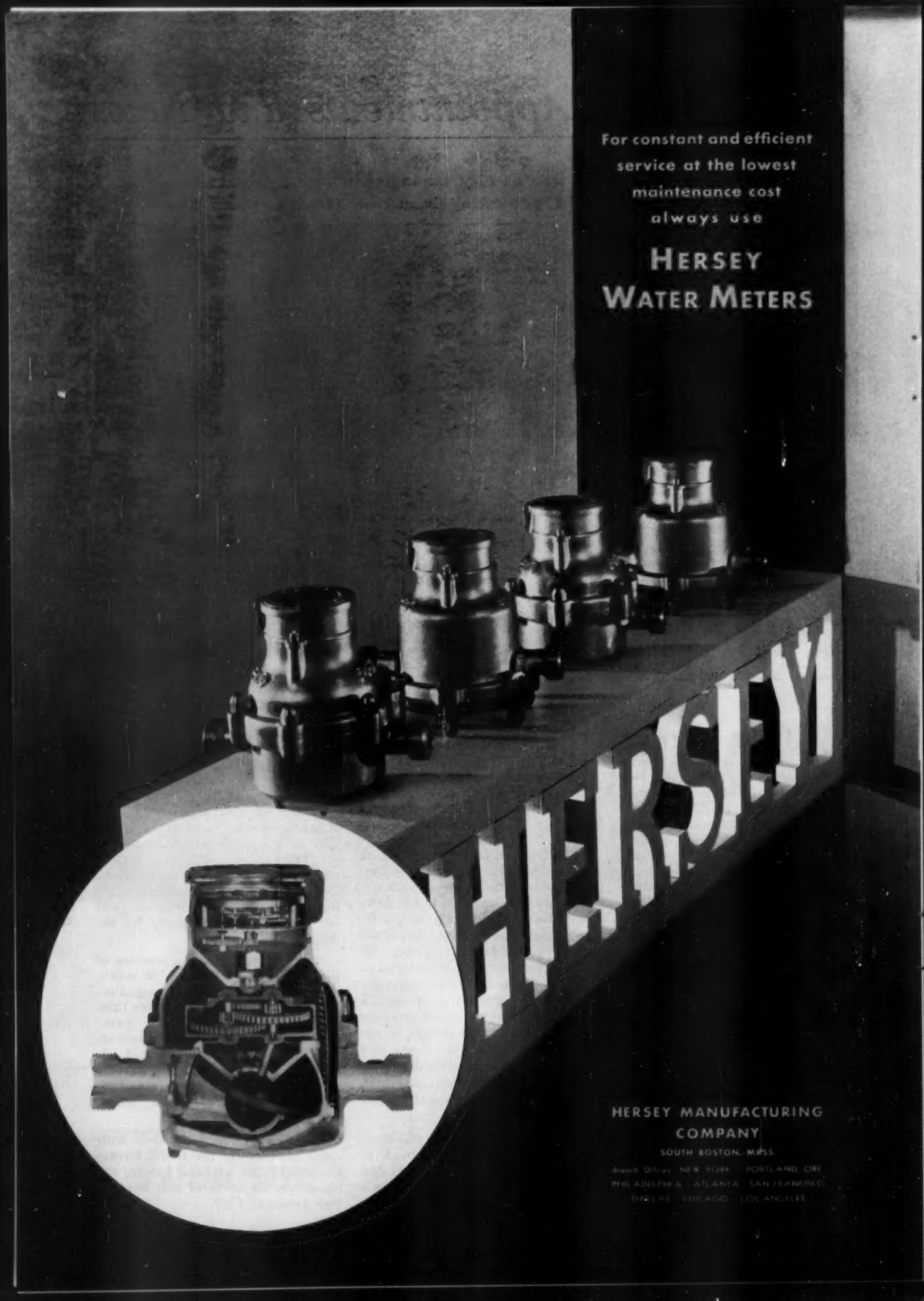
References to the problems of growth in fringe areas just beyond city and town boundaries recurred frequently during the conference. Howard K. Menhinick, Professor of City Planning at Georgia Institute of Technology, told the managers that in his opinion the fringe problem was the number one problem facing cities today. He predicted that in the future the range of the "suburban fringe" would extend to over 100 miles from central city boundaries as a result of helicopter developments. According to Professor Menhinick one of the solutions to the financial difficulties that fringe growth brings to cities and towns lies in the ultimate formation of metropolitan governments that will encompass both central cities and surrounding municipalities.

The annexation of unincorporated fringe areas was referred to by A. E. Fuller, County Manager of Fulton County, Ga., as an immediate means of dealing with financial difficulties brought on by peripheral development.

In the opening meeting, retiring ICMA President, George E. Bean, City Manager of Peoria, Ill., called on the conferees to extend and strengthen their lines of communication with the voters in their communities, so that their management programs will be understood more clearly by the public.

At the annual business meeting of the Association, Ross E. Windom, City Manager of St. Petersburg, Fla., was elected ICMA President for 1955. Elected as Vice-Presidents were: E. J. Allison, H. M. Crane, Elder Gunter, James F. Shurtleff, and J. H. Wigglesworth, managers respectively of Ogden, Utah; LaGrange, Ga.; University City, Mo.; Medford, Mass.; and Lawrence, Kans.

These new officers, together with other members of the ICMA Executive Board and outgoing officers are shown on the cover of this issue of THE AMERICAN CITY.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Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

Jan. 5-7—New York, N. Y.
NORTHEASTERN WEED CONTROL CONFERENCE—Public Health Section. Annual Meeting (Hotel New Yorker). For information address R. C. Sweeney, New York State Health Department, 21 N. Broadway, Box 670, White Plains, N. Y.

Jan. 10-13—New Orleans, La.
AMERICAN ROAD BUILDERS' ASSOCIATION. Annual Convention and Highway Materials and Supplies Exhibit (Hotel Roosevelt). Exec. Vice-Pres., General Eugene Reybold, World Center Bldg., Washington 6, D. C.

Jan. 11-14—Washington, D. C.
HIGHWAY RESEARCH BOARD. Annual Meeting (National Academy of Sciences Bldg.). Dir., Fred Burggraf, 2101 Constitution Ave., Washington 25, D. C.

***Jan. 13-14—Washington, D. C.**
CHAMBER OF COMMERCE OF THE U. S. National Conference on Highway Financing. Chairman, Dechard A. Hulcy, National Chamber director, Washington, D. C.

Jan. 18—New York, N. Y.
AMERICAN WATER WORKS ASSOCIATION—New York Section. Winter Meeting (Park Sheraton Hotel). Sec., Kimball Blanchard, Rensselaer Valve Company, 56 Grand St., White Plains, N. Y.

Jan. 20-21—New York, N. Y.
NEW YORK SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (Hotel Belmont Plaza). Exec. Sec., R. C. Sweeney, 21 N. Broadway, White Plains, N. Y.

Jan. 23-27—Chicago, Ill.
ASSOCIATED EQUIPMENT DISTRIBUTORS. Annual Meeting (Conrad Hilton Hotel). Exec. Sec., P. D. Herman, 30 E. Cedar St., Chicago 11, Ill.

Jan. 27-28—Wilmington, Calif.
FOURTH ANNUAL INSTRUMENT SHORT COURSE. (Los Angeles Harbor Junior College.) For information address J. R. Wilson, Southern California Meter Association, 640 Fillmore St., Fillmore, Calif.

***Feb. 2-4—Berkeley, Calif.**
INSTITUTE OF TRANSPORTATION AND TRAFFIC ENGINEERING. California Street and Highway Conference (University of California). Berkeley, Calif.

Feb. 7-9—New Orleans, La.
ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS. Annual Meeting (Jung Hotel). Sec.-Treas., W. K. Parr, Box 376, Ann Arbor, Mich.

Feb. 8-10—Buffalo, N. Y.
ASSOCIATION OF TOWNS OF THE STATE OF NEW YORK. Annual Meeting (Hotel Statler). Exec. Sec., Edw. F. N. Uthe, 91 State St., Albany, N. Y.

Feb. 9-11—Indianapolis, Ind.
AMERICAN WATER WORKS ASSOCIATION—Indiana Section. Annual Meeting (Lincoln Hotel). Sec.-Treas., Robert J. Becker, 113 Monument Circle, Indianapolis, Ind.

***Feb. 17-18—Columbus, Ohio**
OHIO WATER CLINIC. Annual Conference (Ohio State University). For information address Kenneth W. Cosens, Clinic Director, Civil Engineering Department, The Ohio State University, Columbus 10, Ohio.

Feb. 22-25—Sacramento, Calif.
CALIFORNIA MUNICIPAL UTILITIES ASSOCIATION. Annual Meeting (Hotel Senator). Sec., F. V. Frey, Room 108, City Hall, 100 N. Garfield, Pasadena, Calif.

March 2-4—Atlantic City, N. J.
ASSOCIATION OF HIGHWAY OFFICIALS OF THE NORTH ATLANTIC STATES. Annual Convention (Hotel Traymore). Sec.-Treas., A. Lee Grover, 1035 Parkway Ave., Trenton, N. J.

March 6-11—College Station, Texas
TEXAS WATER AND SEWAGE WORKS ASSOCIATION. Annual Meeting (Texas A & M College). Sec., V. M. Ehlers, Texas State Department of Health, Austin, Texas.

March 7-11—Washington, D. C.
AMERICAN CONGRESS ON SURVEYING AND MAPPING—Jointly with the AMERICAN SOCIETY OF PHOTOGRAMMETRY. Annual Meeting (Hotel Shoreham). For information, address either Walter S. Dix, Sec. of ACSM, P. O. Box 470, Ben Franklin Station, Washington, D. C., or C. Earl Palmer, Sec. of ASP, 1000 11th St. NW., Washington 1, D. C.

March 9-11—Atlantic City, N. J.
NEW JERSEY MOSQUITO EXTERMINATION ASSOCIATION. Annual Meeting (Hotel Chalfonte-Haddon Hall). Sec., Bailey B. Pepper, c/o Agricultural Experiment Station, New Brunswick, N. J.

March 9-11—Boston, Mass.
AMERICAN CONCRETE PIPE ASSOCIATION. Annual Convention (Sheraton Plaza Hotel). Managing Dir., Howard F. Peckworth, 228 N. LaSalle St., Chicago 1, Ill.

March 14-17—New Orleans, La.
ASSOCIATED GENERAL CONTRACTORS. Annual Convention (Hotel Roosevelt). Managing Dir., H. E. Foreman, 1227 Munsey Bldg., Washington 4, D. C.

March 21-23—Fayetteville, Ark.
ARKANSAS WATER AND SEWAGE CONFERENCE. (Mountain Inn.) Sec.-Treas., Harrison Hale, Southern State College, Magnolia, Ark.

March 21-23—Savannah, Ga.
AMERICAN WATER WORKS ASSOCIATION—Southeastern Section. Annual Meeting (DeSoto Hotel). Exec. Sec., N. M. de Jarnette, Georgia Department of Public Health, 245 State Office Bldg., Atlanta, Ga.

March 30-April 2—Kansas City, Mo.
AMERICAN INSTITUTE OF PLANNERS. Annual Meeting (Muehlebach Hotel). Exec. Dir., P. L. Norton, 34 Brattle St., Cambridge 38, Mass.

***March 31-April 1—Durham, N. C.**
SOUTHERN MUNICIPAL AND INDUSTRIAL WASTE CONFERENCE. (College of Engineering, Duke University). For information address J. W. Williams, Acting Head, Department of Civil Engineering, College of Engineering, Duke University, Durham, N. C.

***April 4-8—Amherst, Mass.**
ADVANCED SEWAGE TREATMENT WORKS OPERATORS' SHORT COURSE. (N. E. Field Training Center). Exec. Sec., N. G. Kitson, Director of Environmental Sanitation, Room 543, State House, Boston, Mass.

April 11-14—Lafayette, Ind.
PURDUE ROAD SCHOOL. (Union Building, Purdue University.) Exec. Sec., Ben H. Petty, Professor of Highway Engineering, Purdue University, C-E Bldg., Lafayette, Ind.

April 13-15—Hutchinson, Kans.
AMERICAN WATER WORKS ASSOCIATION—Kansas Section. Annual Meeting (Baker Hotel). Sec.-Treas., Harry W. Badley, 119 W. Cloud St., Salina, Kans.

April 13-15—Lincoln, Nebr.
AMERICAN WATER WORKS ASSOCIATION—Nebraska Section. Annual Meeting (Cornhusker Hotel). Sec., E. Bruce Meier, Asst. Prof. of Civil Engineering, University of Nebraska, Lincoln, Nebr.

***April 14-15—Miami, Fla.**
AMERICAN SHORE AND BEACH PRESERVATION ASSOCIATION. Annual Meeting. Sec.-Treas., Peter J. Cannon, 1060 Broad St., Newark, N. J.

April 14-16—Chandler, Ariz.
AMERICAN WATER WORKS ASSOCIATION—Arizona Section. Annual Meeting (San Marcos Hotel). Exec. Sec., Quentin Mees, 721 N. Olsen St., Tucson, Ariz.

April 18-20—Quebec City, Que.
AMERICAN WATER WORKS ASSOCIATION—Canadian Section. Annual Meeting (Chateau Frontenac). Sec., A. E. Berry, Director, Ontario Department of Health, Parliament Bldgs., Toronto 8, Ont.

April 20-22—Buffalo, N. Y.
AMERICAN WATER WORKS ASSOCIATION—New York Section. Annual Meeting (Hotel Statler). Sec., Kimball Blanchard, Rensselaer Valve Company, 56 Grand St., White Plains, N. Y.

April 24-28—Seattle, Wash.
AIRPORT OPERATORS COUNCIL. Annual Meeting (Hotel Olympic). Exec. Sec., Robert C. Mayer, 1625 K St. NW., Washington 6, D. C.

April 21-23—Alexandria, La.
LOUISIANA MUNICIPAL ASSOCIATION. Annual Meeting (Hotel Bentley). Sec.-Treas., Mrs. Douglas M. Warriner, 538 Raymond Bldg., Baton Rouge, La.

April 28—Butte, Mont.
MONTANA SEWAGE WORKS ASSOCIATION. Annual Meeting (Finlen Hotel). Exec. Sec., H. W. Taylor, 910 Helena Ave., Helena, Mont.

April 29-30—Butte, Mont.
AMERICAN WATER WORKS ASSOCIATION—Montana Section. Annual Meeting (Finlen Hotel). Sec., A. W. Clarkson, Acting Chief, Water Section, Division of Environmental Sanitation, State Board of Health, Helena, Mont.

May 1-5—New Orleans, La.
MUNICIPAL FINANCE OFFICERS ASSOCIATION OF THE UNITED STATES AND CANADA. Annual Conference (Jung Hotel). Exec. Dir., Joseph F. Clark, 1313 E. 60th St., Chicago 37, Ill.

May 2-4—Washington, D. C.
CHAMBER OF COMMERCE OF THE U. S. Annual Meeting (National Chamber Building). Exec. Vice-Pres., Arch N. Booth, 1615 H St. NW., Washington 6, D. C.

May 16-20—Washington, D. C.
NATIONAL CONFERENCE ON WEIGHTS AND MEASURES. Fortieth National Conference (Shoreham Hotel). Sec., W. S. Bussey, National Bureau of Standards, Washington 25, D. C.

May 17-20—Chicago, Ill.
NATIONAL INSTITUTE OF MUNICIPAL CLERKS. Annual Meeting (LaSalle Hotel). Pres., Arthur J. Shinners, Town Hall, Brookline, Mass.

***May 19-21—New York, N. Y.**
UNITED STATES CONFERENCE OF MAYORS. Annual Conference (The Waldorf-Astoria). Exec. Dir., Paul V. Betters, 730 Jackson Pl. NW., Washington 6, D. C.

June 12-17—Chicago, Ill.
AMERICAN WATER WORKS ASSOCIATION. Annual Conference (Conrad Hilton Hotel). Sec., Harry E. Jordan, 521 Fifth Ave., New York, N. Y.

***Oct. 10-13—Atlantic City, N. J.**
FEDERATION OF SEWAGE AND INDUSTRIAL WASTES ASSOCIATIONS. Annual Meeting (Ambassador Hotel). Sec., W. H. Wisely, 325-26 Illinois Bldg., Champaign, Ill.

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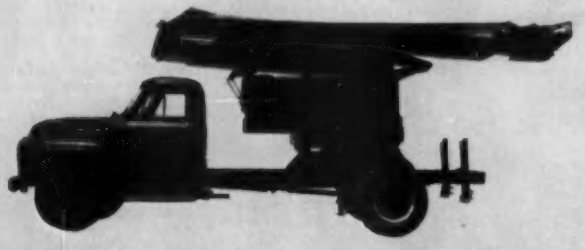

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ALTHOUGH many boroughs and townships in Allegheny County, Pa., have limited summer recreation programs, only a very few have tackled the task of providing year-round, diversified programs for persons of all ages. Recently, however, three boroughs—Dormont, Oakmont, and West View—have taken steps to improve recreational services.

As reported in The Allegheny County Local Government *News-Letter* for November 1954, Dormont has employed a full-time professional recreation director and has added to its recreational facilities by opening a new recreation center. The West View Borough Council now has a recreation plan to guide it in the development and location of recreation areas. The plan resulted from a survey conducted by the Pittsburgh Regional Planning Association. In Oakmont, the manager in a report to the Borough Council has suggested a long-range program for the acquisition and development of needed recreation facilities.

Municipal Home Rule Advances in Maryland

MUNICIPAL home rule took a big forward step in Maryland at the November election. Voters in the nation's third smallest state adopted a constitutional amendment clearing the track for greater responsibility on the local government level. Effective groundwork for passage of the amendment was laid during several years of campaigning by the officers and members of the Maryland Municipal League.

Armed now with a mandate for greater freedom of action on the municipal level, the League members and other home-rule advocates must obtain implementing legislation in the Maryland General Assembly. A draft bill to be submitted to the assembly members has been prepared by the Legislative Council of the League. Consideration of the proposed bill is expected to occur early in the 1955 session of the Assembly.

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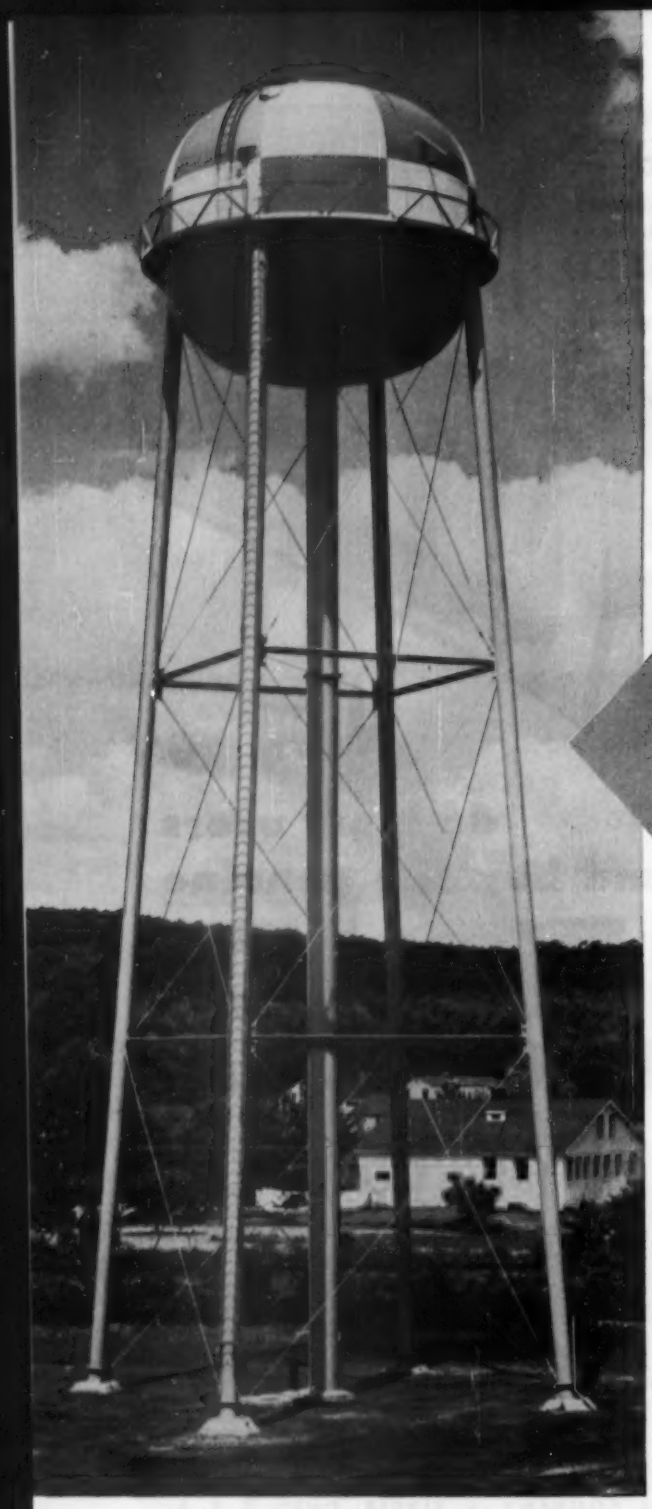

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Municipal & Civic Publications

State and Local Government

THE GOVERNMENT AND ADMINISTRATION OF NEW YORK—*By Lynton K. Caldwell. Thomas Y. Crowell Company, 432 Fourth Ave., New York 16, N. Y.* 1954. 506 *pp.* $5.95.

This volume inaugurates the American Commonwealth Series, edited by W. Brooke Graves. The analysis of governmental institutions of the State of New York describes government on both state and local levels, giving detailed discussions of laws, policies, programs, departments, and agencies. It will prove a valuable and much-used addition to the reference shelf for government officials at all levels, civic groups, taxpayers and business organizations and others.

Although only two of the 23 chapters are devoted to local government as such, nearly every chapter describes ways in which state policies and programs operate at the local level.

Three others just published in this forthcoming series of volumes cover in a similar manner the States of Florida, Mississippi, and Wyoming. The price is $4.95 for each of these three. According to present plans, there will be a volume for each of the 48 states, for the three U. S. territories, and for the District of Columbia.

New York Region Population Forecast

POPULATION, 1954-1975 — *Bulletin No. 85 of the Regional Plan Association, 205 E. 42nd St., New York 17, N. Y. November* 1954. 36 *pp.* $10.

Basing its findings on studies of birth rates, the impact of an emerging network of interregional superhighways, and trends in the migration and distribution of population and industry, the Regional Plan Association forecasts an increase of 4,000,000 people in the New York metropolitan region by 1975—86% of whom will go to the city's 17 suburban counties. Each county is studied separately, with due consideration given to the land available for residential expansion, to shifts in the distribution of population, industry and commerce, and to the probable impact of existing and planned limited-access highways. The figures for Richmond are especially interesting as the Association predicts a 241% increase in population for New York City's only "rural" borough.

Municipal Finance

MUNICIPAL FINANCE, November 1954 — *Published four times a year by the Municipal Finance Officers Association, 1313 E. 60th St., Chicago 37, Ill.* $1.50 *per year; 50 cents per copy.* 104 *pp.*

The November issue of *Municipal Finance* contains an excellent series of articles on financial problems of small and medium-sized municipalities. These include: Practical Use of Student Trainees in Finance Departments; Group Insurance for Municipal Employees; Better Assessment Administration Increases Revenue; Economical Buying Methods for Governmental Units; Getting the Most from Machine Accounting; Tax and Other Revenue Collection Procedures; Urban and Fringe Area Financial and Operating Problems in a Medium-Sized City and in a Small City; Establishing Utility Rates and Service Charges; Reports to Taxpayers and Reports to Management.

Street Construction

HIGHWAY ENGINEERING — *By Lawrence I. Hewes and Clarkson H. Oglesby. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.* 628 *pp.* $8.

A workman-like text on road and street construction, that, as the title indicates, gives greatest emphasis to rural highway problems. Nevertheless, city officials will find the discussion helpful.

Impact of Grants-in-Aid

THE IMPACT OF FEDERAL GRANTS-IN-AID ON CALIFORNIA—*By Earl C. Segrest and Arthur J. Misner. Bureau of Public Administration, University of California, Berkeley, Calif.* 1954. 347 *pp.* $4.50.

The work of the special Commission on Intergovernmental Relations set up by President Eisenhower soon after his inauguration has stimulated study of the impact of federal grants-in-aid in different states. Although this volume pertains to California, the great significance that any changes in the present relationships will have to all levels of government makes all published matter on this subject of interest to municipal as well as state and federal officials.

This is a very complete study, and it reports in detail on the effects of federal grants to California and its local governments for the following purposes: highways, public health, education, public assistance and child welfare services, employment security, urban redevelopment, and public housing. Introductory chapters give a background on social and economic factors in California as well as on state and local fiscal problems.

In discussing the impact of federal grants on local government in California, the authors state that the grants have resulted in a shift of authority from local to state government, especially in the fields of public assistance, highway construction, and vocational education. They go on to say, however, that there is no evidence that the shift has undermined the vitality of local government units.

Big City CD

STATUS OF CIVIL DEFENSE IN AMERICA'S LARGEST CITIES—*American Municipal Association, 1625 H St. NW., Washington 6, D. C.* 1954. 33 *pp.* $1.

The civil defense activities of 24 U. S. cities having a population of more than 400,000 are herein reported. Detailed data cover financial provisions, personnel, coordination with environs, evacuation plans, control centers, and shelter programs. Also listed are the names of the officials supplying the information for each city.

Housing Newsletter Renamed

CURRENT PROGRAMS AND OPERATIONS OF THE HOUSING AND HOME FINANCE AGENCY—*Edited by Flora Y. Hatcher. Housing and Home Finance Agency, Office of the Administrator, Washington 25, D. C.*

On November 10, 1954, this factual summary for public interest organizations was inaugurated to replace the *Housing Newsletter*. It will be issued periodically to keep such organizations abreast of the housing programs and operations for which the Agency is responsible.

Recommended Governmental Changes For Chicago

MODERNIZING A CITY GOVERNMENT—*A Report of the Chicago Home Rule Commission. The University of Chicago Press, 5750 Ellis Ave., Chicago 37, Ill.* 1954. 422 *pp.* $6.

This is a report of a commission created in 1953 to recommend governmental changes and added local powers necessary to provide better services for Chicago's citizens. Students and municipal officials interested in the concept of home rule will find this report interesting reading, for although it deals primarily with Chicago problems, the Commission reports on home rule operation in other parts of the United States and concludes with a chapter that reappraises the home rule idea.

The creation, organization, and scope of operation of the Commission are first set forth. This is followed by a survey of Chicago's great economic growth and an appraisal of the city's present concern with redevelopment and conservation. In the main body of the book, the Commission presents its recommendations, among which are changes in the size and composition of the City Council, and improved budget and financial operations.

Suggested Rules of Procedure for Zoning Boards of Adjustment

RULES AND REGULATIONS AND FORMS FOR ZONING BOARDS OF ADJUSTMENT — *Institute of Local Government, University of Pittsburgh, Pittsburgh, Pa.* 1954. 9 *pp. plus forms and supplement.* $1.50.

This handy booklet contains a very complete set of rules of procedure for a board of adjustment. While every such board will want to tailor its rules to fit its own needs, the suggested rules presented here can form a pattern for local elaboration and variation. Suggested forms to be used in the processing of appeals and other official business are also presented. Finally, a supplementary text describes five principles that should be an essential part of the operation of every board of adjustment.

Nine Papers on City Planning

CITY PLANNING AT YALE—A SELECTION OF PAPERS AND PROJECTS—*Edited by Christopher Tunnard and John N. Pearce. Department of Architecture, Yale University, New Haven, Conn.* 1954. 86 *pp.* $1.50.

The nine papers presented in this attractive book are outgrowths of the work of the Graduate Program in City Planning at Yale University. Some of the papers are by recognized authorities in the municipal and city planning field who first presented their material as lectures at the University. Others are condensations of some of the student work—theses, major problems, etc. The subjects presented range from an analysis of the total pattern produced by the many individual town zoning plans in Connecticut, to a discussion of the relationship of industry and town design. Illustrations show examples of the city and town planning designs being produced by students at Yale.

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Hydraulic Pumping

HYDRAULICS HANDBOOK — *Fairbanks, Morse & Company, Fairbanks-Morse Bldg., Chicago 5, Ill.* 249 *pp.* $3.50.

A practical man's handbook on hydraulics, as it applies to pumps and pumping. The book deals with such subjects as pipe friction; properties of water; pumping of viscous liquids, volatile liquids, solids in suspension, chemical liquids; and pump testing. It is profusely supplied with tables, graphs, and data on mechanical and electrical and other subjects relating to pumps.

Handbook for Municipal Employees

WORKING TOGETHER FOR SANTA MONICA — *Prepared by the Personnel Department, City of Santa Monica, Calif.* 1954. 22 *pp.*

Here is a neat example of the employee handbook that gives to the municipal employee some history and background for his job, as well as information on procedures, employee benefits, and general duties and responsibilities.

Industrial Water Supply

INDUSTRIAL WATER — *American Society for Testing Materials,* 1916 *Race St., Philadelphia* 3, *Pa.* 1954. *Second Edition.* 430 *pp.* $5.

A handy book for the municipal official whose responsibilities lie in water supply, since it will help him meet industrial water-supply problems more effectively. The book, however, is designed primarily for industrial officials and consultants who face the problems directly. The book offers a broad discussion of the nature and use of industrial water, plus up-to-date test methods and specifications.

Ground Rent and Land Economics

DIE BODENRENTE IN RAUMWIRTSCHAFT UND RAUMPOLITIK—*von Martin Pfannschmidt. Bremen-Horn: Walter Dorn Verlag,* 1953. *pp. viii,* 218 (*plus* 60 *charts and graphs in unpaged appendix.*) *Photo offset.*

This volume, which deals with the place of ground rent in the economics and politics of land, is the 25th in a series of studies made under the auspices of the Academy for Research in Land and Land Planning of Hannover.

The first part of the work deals with the evolution of political and economic theory concerning land, land use, and land tenure; and quotes among others from German writers of a century and more ago before statism had assumed the dominant position in German thinking which it achieved more recently. The association of land and liberty in their thinking, and their belief in the usefulness of land-value taxation are apparent. The second part is based in the main on English, American and Danish publications dealing with movements for, and experiments with, land-value taxation in many parts of the world. It seems to be a comprehensive survey of available texts. The third part presents the author's views on the place of land-value taxation, not only in the task of replanning and rebuilding which confronts Germany today, but also in the even greater task of halting the advance of communism in underdeveloped areas.

In the judgment of this reviewer, the Academy in Hannover was warranted in its decision to publish the volume. He even ventured to hope that it may be translated into English. If so, the charts and graphs should be clarified and placed nearer the text they were designed to illuminate.

PHILIP H. CORNICK

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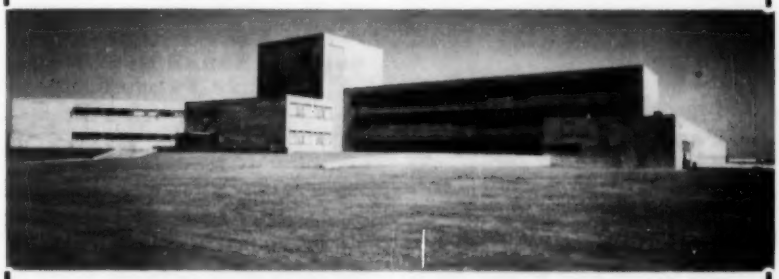

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Planning Guide for Laymen

CITY PLANNING AND ZONING IN THE CITY OF ROANOKE, VA.—*City Planning Commission and Board of Zoning Appeals, Roanoke, Va. October* 1954. 22 *pp.*

This handy booklet summarizes for the citizens of Roanoke information regarding planning and zoning. The duties of the city planning commission are outlined, as are the functions of the Board of Zoning Appeals, some of the requirements of the Subdivision Ordinance, the regulations of the Zoning Ordinance, how it is enforced, the property owner's right of appeal, the procedure for amendments, setback lines for street widening, and suggestions regarding several departments of the city which render services to property owners.

Solving Problems of Rapid Population Increase

WHAT'S GOING ON HERE?—*A comprehensive Survey by* The Flint Journal, *Flint, Mich.* 1954. 20 *pp.*

Last year *The Flint Journal* ran a series of articles on how other communities were solving the many governmental problems brought about by rapid population increases. Since that time a grass-roots movement, called the Flint Area Study, has begun analyzing the essential needs of Flint, and at its request the *Journal* visited communities seeking solution to problems through area-wide studies. The articles contained in this pamphlet show how study groups in Miami, Pittsburgh, Toledo, and other cities are meeting with success and how their methods compare with those of Flint.

Real Estate Tax Law

MODEL REAL PROPERTY TAX COLLECTION LAW — *2nd Ed. National Municipal League, 47 E. 68th St., New York* 21, *N. Y.* 1954. 40 *pp.* $1.

The League's first model tax collection law, published in 1935, was widely used as an emergency guide in tax levying and in liquidation of delinquencies during the 1930's and '40's. This present, up-to-date edition strengthens the basic structure and principles of the original and provides a useful check list of essentials, as well as basic legal text which may be adapted to the requirements of individual states.

Can Your Community Support Sound Health and Welfare Programs?

TOWARD SOLVING THE PUZZLE—*Massachusetts Community Organization Service, 3 Joy St., Boston* 8, *Mass.* 1954. 88 *pp.* $1.

This manual for the appraisal of community resources and social services not only helps citizens to appraise local health, welfare, and recreation services, but also suggests a method for estimating the relative ability of the community to pay for them. It should prove especially valuable to community study groups, citizens' committees, governmental bodies, community chests-councils, voluntary fund-raising agencies, taxpayers' associations, and other organizations concerned with planning and financing health, welfare and recreation services. Sample forms, charts and graphs, as well as specific sources of information and a number of technical aids, implement the process of inquiry and analysis recommended for each community.

A Thousand Pages Of Statisties

STATISTICAL ABSTRACT OF THE UNITED STATES, 1954 — *Bureau of the Census, U. S. Department of Commerce.* 1,056 *pp. For sale by Superintendent of Documents, Government Printing Office, Washington* 25, *D. C.* $3.75.

This standard summary of statistics on the industrial, social, political, and economic organization of the United States includes a representative selection of data from most of the important statistical publications, both governmental and private. It is intended to serve as a convenient volume for statistical reference and as a guide to other statistical publications and sources. Among the new tables introduced in this 75th annual edition are: Projections of the population to 1975, Characteristics of the Aged, Community Chest Campaigns, national wealth estimates—to mention just a few.

Municipal Growth Guide

GUIDING MUNICIPAL GROWTH — *New Jersey Taxpayers Association,* 414-17 *Broad St. Bank Bldg., Trenton* 8, *N. J. December* 1954. 15 *pp. Single copies free.*

This Guide is the first of a series designed to help officials and citizens reach the decisions that will ease rather than complicate future tax problems in growing municipalities. It is a concise introduction to the comprehensive field of municipal growth, dealing with the orderly development of the municipality by means of capital budgeting, zoning, planning, codes, appropriate form of government, etc.

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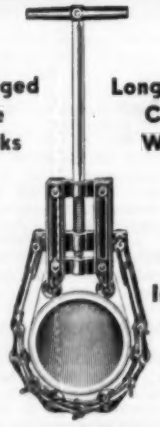

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Sea Water Purification

FRESH WATER FROM THE OCEAN—*By Cecil B. Ellis. Roland Press, 151 E. 26th St., New York 10, N. Y.* 217 *pp.* $5.

An interesting little book that promises, within the next 10 years, fresh water from sea water at a price of 30 cents per 1,000 gallons at locations of favorable power development. It runs through what looks like the entire gamut of possibilities. It discusses electrolysis, magnetic force membranes and charged-net membranes, distillation, freezing, and various chemical surface methods. It also suggests towing icebergs to a point of use, placing huge, artificial lakes of sea water that would have a tendency to alter the character of the climate, and also changing the course of the Japan Current in the Pacific Ocean. The book holds little hope for most of the methods and nominates the electric membrane system as the one with the most promise.

Vermont Directory of Officials, Business Institutions, Manufacturers

1954 VERMONT YEAR BOOK—Published by *The National Survey, Chester, Vt.* 384 *pp.* $4.

The Year Book, founded in 1802 as *Walton's Register*, is a detailed official and commercial directory. Part I contains general information about Vermont, including a directory of officials, schools, clubs, and societies. Part II is a directory of manufacturers and wholesalers. Part III is a commercial and business directory, and a gazetteer of officials, trades, professions, institutions, etc., for every town and city in the state.

For Police Officials: Constructive Ideas to Arrest Juvenile Delinquency

POLICE WORK WITH JUVENILES—*By John P. Kenney and Dan G. Pursuit. Charles C. Thomas, publisher, 301-327 E. Lawrence Ave., Springfield, Ill.* 1954. 371 *pp.* $7.75.

This is the first book to deal in its entirety with a problem that results in between 5% and 10% of the youth of this nation coming to the attention of police agencies and juvenile courts. The book is written from the point of view of the police official. The authors are throughly trained law-enforcement officers who are now faculty members of the School of Public Administration at the University of Southern California.

The book is divided into three major parts. Part I is titled: Organization and Administration for a Police-Juvenile Program. It deals extensively with the functions and organization of a juvenile control division of a police department. The selection and training of officers for juvenile control work and the keeping of suitable records on juvenile arrests and problems are among other topics discussed in this part of the book.

Part II is titled: "Individualizing the Police Approach to Juveniles." Here are discussed the causes of juvenile delinquency, the making of a healthy personality, and such other subjects as the investigation of individual juvenile offenders.

Part III is titled: "Teamwork for Delinquency Control and Prevention," and stresses the importance of all social groups working together in a community to arrest and prevent juvenile delinquency.

Housing Trends in Canada

HOUSING IN CANADA — *Economic Research Department, Central Mortgage and Housing Corporation, Ottawa, Canada. August* 1954. 125 *pp.*

Housing in Canada is published quarterly to provide information necessary for an understanding of conditions in the Canadian housing market. The report is arranged in three parts. A textual summary is presented in Part I highlighting the statistical material contained in Part II. Part III provides source notes for the statistical data and explanatory notes where special interpretations are necessary.

The textual summary contains an outline of the provisions of the National Housing Act of Canada, which came into force on March 22, 1954.

Prefabricated Housing Bibliography

INTERNATIONAL BIBLIOGRAPHY OF PREFABRICATED HOUSING — *By Phyllis M. Kelly and Caroline Shillaber. Albert Farwell Bemis Foundation, Massachusetts Institute of Technology, Cambridge, Mass. June* 1954. 85 *pp.* $1.

This bibliography indicates the wide range of literature available in different languages for countries which produce or make use of prefabricated housing. Items are grouped by country in three different categories: (1) books and pamphlets; (2) alphabetical list of references to periodical articles where only one entry is given from a particular periodical; and (3) alphabetical list by title of periodical where there are two or more references

(Continued on page 187)

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Traverse City, Michigan

Manufacturers

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A.W.W.A. Specifications for Municipal and Industrial Work
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Equipped with a snow blade, the all-new 4-Wheel-Drive Universal 'Jeep' is an efficient snow plow for clearing driveways, walks and service areas. The hydraulically-controlled blade can be quickly attached or detached.

Snow removal is another job done better with the 4-wheel-drive traction and maneuverability of the all-new 'Jeep'. No other vehicle spreads its cost over so many jobs. Your 'Jeep' dealer will give you complete details.

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CONTROL SYSTEM

for full flexible-progressive control of traffic

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~~Lewiston, Maine~~
~~Baltimore, Maryland~~
~~Brockton, Mass.~~
~~Kansas City, Missouri~~

Vicksburg, Mississippi
St. Joseph, Missouri
Albuquerque, New Mexico
Batavia, New York
Rochester, New York
Goldsboro, North Carolina
Toledo, Ohio
Tulsa, Oklahoma
Klamath Falls, Oregon
McKeesport, Pennsylvania
Bristol, Tennessee
Austin, Texas
Dallas, Texas
Laredo, Texas
Longview, Texas
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Green Bay, Wisconsin
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Melbourne, Australia
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✻ **Buffalo, N. Y.** "... many times we were more than pleased that we chose a system so reliable – one that could be adjusted on the spot with the only tools required being a key to open the cabinet."

Walter B. Kahn

SUPERINTENDENT, BUFFALO POLICE SIGNAL SYSTEM

✻ **Charlotte, N. Carolina.** "The design of your traffic controller makes combinations of settings for traffic patterns very easy. The equipment will handle all types of traffic volumes by time of day or day of week that the street pattern here in Charlotte is required to carry."

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✻ **Columbia, S. Carolina.** "After ten years, we are thoroughly satisfied with this system because of its reasonable cost, dependability, flexibility and ease of maintenance."

R. Kelly Laurens

CITY ELECTRICIAN

✻ **Lubbock, Texas.** "We are using Crouse-Hinds three-dial controllers to advantage. At one critical intersection, the traffic count was 2107 vehicles during the peak hour. The new installation was made approximately one year ago, and today, 4152 vehicles are moved through this intersection during the afternoon peak hour period."

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The Super-Trafflex Master Controller acts upon signal secondaries at each intersection – slows them down or speeds them up as required – keeps them in a proper time relationship with respect to each other – completely supervises their operation at all times to provide a smooth, uninterrupted flow of traffic in all directions at varying speeds.

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CONDULETS • FLOODLIGHTS • TRAFFIC SIGNALS • AIRPORT LIGHTING

Civil Defense and Disaster Policy

(Continued from page 131)

defense but involved in operating an economy after a major attack. This means that not only will there have to be an appropriation of funds for target and support areas, but it also means that a financial policy must be evolved in case the major production and financial centers are destroyed.

B-9. Federal and state governments should give particular attention to the planning for and the providing of all possible financial and all other necessary assistance to support areas, without which they will be unable to meet the burdens placed on them.

B-10. We recommend that the Federal Civil Defense Administration call a special meeting of representatives of states and local civil defense organizations to discuss specific applications of the terms of grants-in-aid for civil defense purposes.

C. RESPONSIBILITIES OF LOCAL GOVERNMENTS

C-1. Target cities should study methods of providing alternate water and power supplies for their own benefit.

C-2. Cities must study the problem of zoning and construction codes to reduce their own vulnerability, particularly to fire and blast hazard.

C-3. Civil defense and disaster preparedness ought to be included as a part of all municipal employees' training and civil defense and disaster assignments be made so that they may be better equipped to carry out their responsibilities.

C-4. Target cities where dispersal is considered possible should develop and maintain close liaison with suburban and rural governmental units for mutual aid and cooperative surveys and agreements on welfare, medical and evacuation problems.

Citizens Adopt New Governmental Forms in New Jersey Communities

THE success of state enabling laws permitting citizens in municipalities to choose the particular form of government that best fits their needs has been proved in New Jersey. Within the past two years eight communities have adopted new governmental forms under the Garden State's Optional Municipal Charter Laws, and seven more have just elected commissions to determine whether a change is desirable. Among the eight municipalities that have adopted new governmental forms, four—including Newark—and two other heavily populated areas favored the mayor-council plan, while three smaller communities chose council-manager forms. A special small municipality charter was adopted by Burlington Township.

BRAXMAR BADGES

Standard Badges Since 1879

Write for catalog illustrating badges for Police, Fire and other City, County and State Officials

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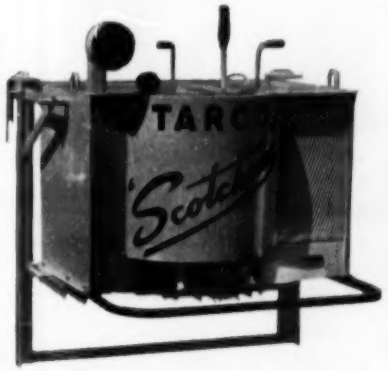
BARE PAVEMENT MAINTENANCE

is **better** . . . is **cheaper** . . . is **positive** with a "Scotchman" spreader.

Your Ice and Snow Control problems **melt away with "Scotchman" applied de-icing salts** . . .

No sand, no cinders.

The "Scotchman's" **exclusive "bird-shot" melting pattern** gives you positive protection **8 times faster, 50% cheaper.** Don't be shackled by outmoded spreading methods. You'll get bare, safe pavements faster and cheaper with a "Scotchman" . . . the modern, scientific method of Ice and Snow Control.



LITERATURE? **DEMONSTRATION?**

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- WRITE TODAY FOR THE COMPLETE "ELECTRONIC WITCH" STORY.

FISHER RESEARCH LABORATORY, INC.
PALO ALTO / CALIF.

Modern Water Rates

(Continued from page 138)

Hydrants	85
Valves	156
Miles of mains	28

Supply—well and spring
Treatment—none
Storage facilities—1,250,000-gallon covered reservoir
Average demand—300,000 gallons daily during winter; 1.5 mgd, summer

Typical Costs Per Quarter

Gallons	*Cubic Feet*	*Costs*
9,000	1,200	$1.50
15,000	2,000	2.13
30,000	4,000	4.00

Remarks

1. Water Department supplies water to churches and city parks without charge.
2. Excess funds are deposited with the city's general fund.
3. City owns meters and places them in a meter box at the lot line. Meters are checked for accuracy once every five years.
4. Rates have remained unchanged for many years.
5. Water, sewers, and garbage carried as separate accounts but billed on the same statement.
6. Bills are prepared on a Burroughs automatic billing machine.

S. Bosgieter
Superintendent of Water

ALTO, TEXAS

Rates Per Month

Volume of Water (in gallons)	*Metered Rates*
First 2,000	$1.75 (min.)
Next 1,000	.50
" 1,000	.40
" 1,000	.35
Excess, per 1,000	.25

General Data

Population served	1,007
Hydrants	54

Supply—wells
Treatment—aeration and chlorination
Storage facilities—covered reservoir, 5,000 gallons elevated tank, 50,000 gallons

Average demand	0.1 mgd
Plant capacity	0.3 mgd

Typical Costs Per Month

Gallons	*Cubic Feet*	*Costs*
3,000	400	$2.25
5,000	667	3.00
10,000	1,333	4.25

Remarks

1. City makes no charge to medical clinic, veterans center; charges flat rate to churches and schools.
2. City owns meters; places them in a meter box at the lot line.
3. Rates have risen only slightly in recent years.

Vernon Rix
Superintendent

CARTERSVILLE, GA.

Rates Per Month

Volume of Water (in cubic feet)	*Metered Rates* (per 100 cubic feet)
First 1,000	$0.35
Next 4,000	.30
" 5,000	.25
" 5,000	.20
" 5,000	.15
Excess	.10

KEEP YOUR MEN BUSY DURING BAD WEATHER

Making Your Concrete Park And Picnic Equipment. City Commissions are finding that citizens appreciate an Attractive Community.

Start on your Spring Requirements NOW
The ANSWER—CMC ALUMINUM MOLDS
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CONCRETE MACHINERY CO.
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LEADITE
The Pioneer Self-Caulking Material for C. I. Pipe

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Jointed with LEADITE for Satisfaction and Long Life

because Leadite makes a good, tight joint that improves with age . . . and in addition, saves on installation costs. Write for Literature.

THE LEADITE COMPANY
Girard Trust Co., Bldg., Philadelphia 2, Pa.

No Caulking

Miscellaneous Regulations

1. Minimum bill is $1.75 for service inside the city; $2.95 for service outside.
2. Quantity rates for service outside the city are double the rates shown.

General Data

Population served	8,000
Services (100% metered)	2,700
Hydrants	183
Valves	163
Miles of mains	44
Supply—river	
Treatment—rapid-sand filtration	
Storage facilities—open reservoirs, 2,000,000 gallons	
Average demand	1.5 mgd
Plant capacity	5.0 mgd

Typical Costs Per Month

Gallons	*Cubic Feet*	*Costs*
3,000	400	$1.75
5,000	667	2.45
10,000	1,333	4.70

Remarks

1. City distributes no water free, nor does it divert water funds to other uses.
2. City owns all meters; places them in a meter box at the lot line.
3. Burroughs billing machine is used to process bills.
4. Rates have been raised one-third in recent years.

ERNEST E. WATKINS
City Manager

SUNNY SLOPE WATER CO.
(Suburb of Pasadena, Calif.)

Rates Per Month

Volume of Water (in cubic feet)	*Charges* (per 100 cubic feet)
First 500 or less	$1.00 (min.)
Second 500	.15
Excess	.05 to .09

Miscellaneous Regulations

1. Each additional service costs $1.00 per month.
2. Excess charges vary with type of use.
3. Fire-service charge is $1.50 per hydrant per month.

General Data

Population served	25,000
Services (92% metered)	5,578
Hydrants	144
Miles of mains	60
Supply—wells	
Treatment—chlorination	
Storage facilities—elevated tank, 150,000 gallons covered reservoir, 10,000,000 gallons	
Average demand	3.3 mgd
Plant capacity	15 mgd

Typical Costs Per Month

Gallons	*Cubic Feet*	*Costs*
3,000	400	$1.00
5,000	667	1.16
10,000	1,333	1.85

Remarks

1. This is a mutual, nonprofit corporation owned by the water users.
2. The water user pays for his meter, but the corporation owns it.
3. The corporation places most meters in meter boxes at the lot line.
4. Bills are calculated on a monthly basis but submitted bimonthly. They are prepared on a Remington Rand automatic billing machine.
5. Rates have remained unchanged for several years.

CLYDE A. WESSON
Manager

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Nationally Recognized for
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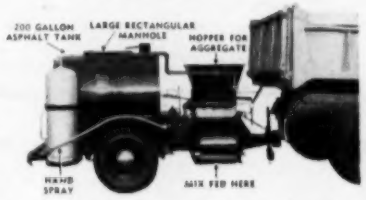
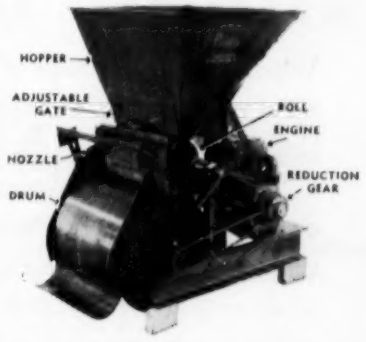
EASY, LOW-COST
Blacktop Maintenance With CARTWRIGHT "PAVETTE"



Correctly and automatically proportions mix, right on the job as needed, in any small quantity desired from a half-shovelful to a wheelbarrow load. Reduces maintenance cost of blacktop because PAVETTE saves time, avoids waste of materials, and can be operated by only two men. Has 200 to 600-gallon tank, and hand spray for applying tack-coat to repair spot.

"PAVETTE" hitches behind maintenance truck and moves along street as repair work progresses.

Eliminates disadvantages of road-mix methods, cold-mix patching, and hauling plant-mixed material to the job.



for YOUR OWN tank unit

"PAVETTE" is furnished as a complete unit with tank and mixer mounted on chassis with two wheels as shown at top of this advertisement, or as a separate mixing unit (shown above) for mounting on your own maintenance truck or trailer.

For detailed information and prices, write to:

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Concrete Pressure Pipe

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This is why the Bureau has specified concrete pressure pipe in many projects under its jurisdiction throughout the Western States. In the State of California alone, approximately 3,000,000 feet of concrete pressure pipe have been used in diameters ranging from 12″ through 84″, and for heads up to **650** feet. These jobs include the Coachella Valley Project, the Cachuma Project near Santa Barbara, both barrels of the San Diego Aqueduct, and the Central Valley Project.

Large pipe distribution systems, often calling for heads of 200 feet and over, are jobs for concrete pressure pipe. So, when your city is planning a water transmission system with either low or high heads be sure to get the facts on concrete pressure pipe.

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Concrete PRESSURE Pipe

WATER FOR GENERATIONS TO COME

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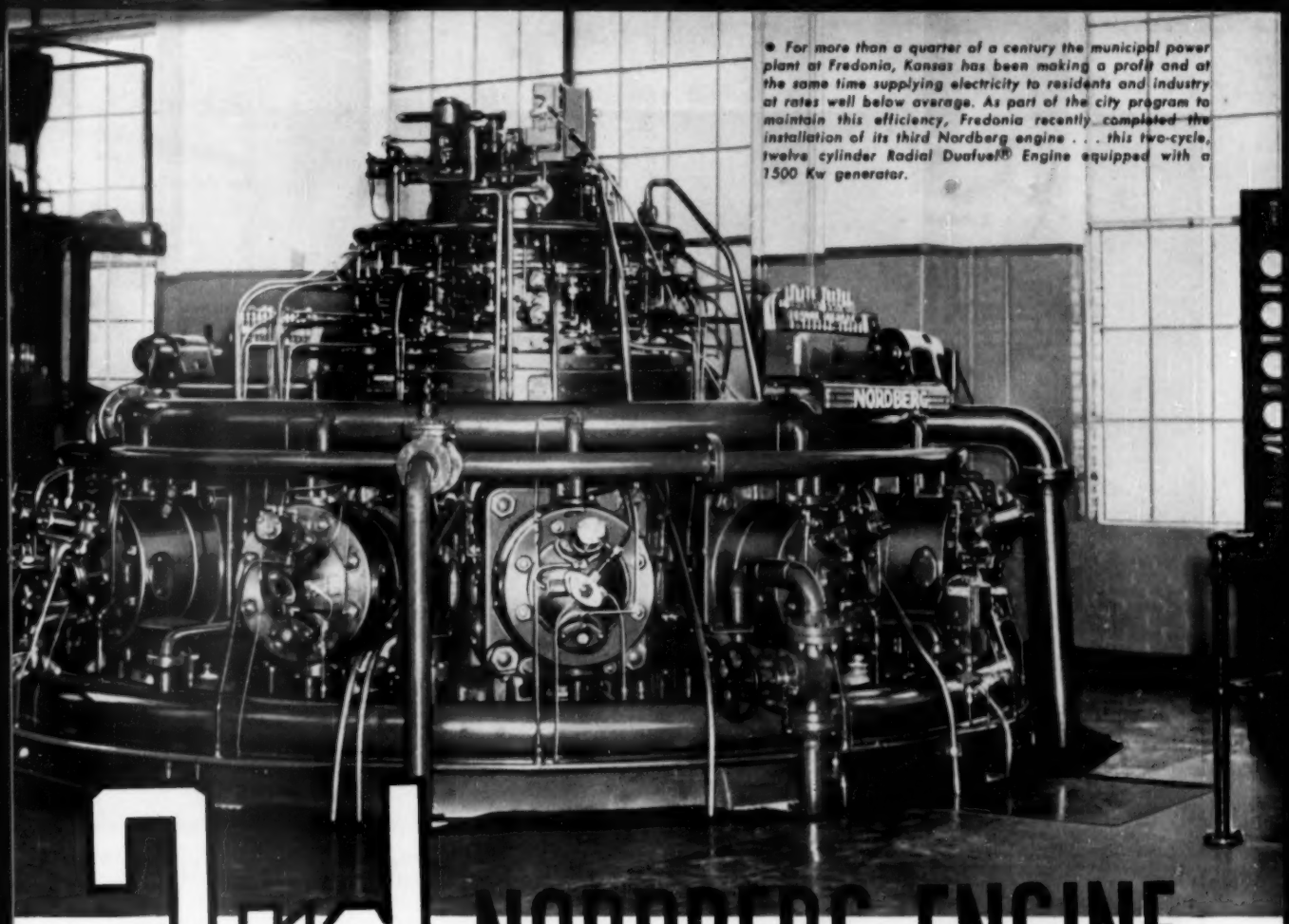

● For more than a quarter of a century the municipal power plant at Fredonia, Kansas has been making a profit and at the same time supplying electricity to residents and industry at rates well below average. As part of the city program to maintain this efficiency, Fredonia recently completed the installation of its third Nordberg engine . . . this two-cycle, twelve cylinder Radial Duafuel® Engine equipped with a 1500 Kw generator.

3rd NORDBERG ENGINE for Fredonia, Kansas

"BOX SCORE"	
1931	Fredonia installs 600 Kw Nordberg two-cycle in-line Diesel engine.
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1953	Third Nordberg installed . . . a two-cycle twelve-cylinder Radial Duafuel® engine direct-connected to a 1500 Kw generator.

With the successful and economical operation of their first two Nordberg engines, it was natural that Fredonia again turned to Nordberg for an economical solution to their latest power expansion problem. It is interesting to note that the Radial engine was chosen primarily because it could be easily installed in a limited space, without increasing plant size.

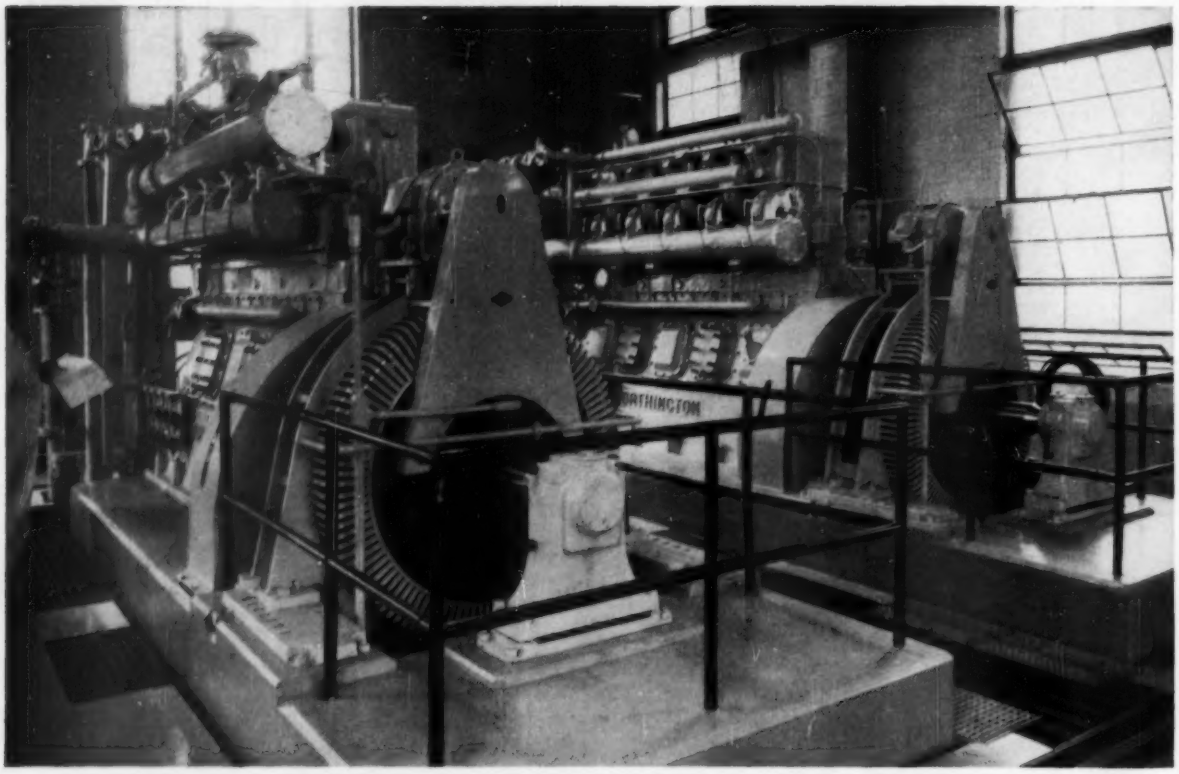
Operating very satisfactorily on natural gas and pilot fuel, the Nordberg Radial Duafuel® engine has been on the line since November, 1953. It is instantly convertible to gas or oil fuel at the movement of a single lever.

Looking for dependable, economical main or stand-by power? Then consider Nordberg . . . builders of America's largest heavy duty engine line . . . 10 to over 10,000 hp.
Nordberg Mfg. Co., Milwaukee, Wisconsin.

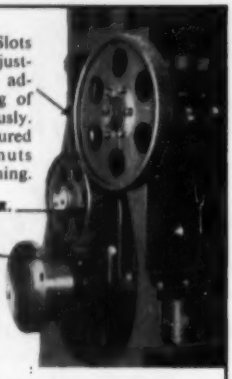
NORDBERG

DIESEL • DUAFUEL® AND SPARK-FIRED GAS ENGINES

P354



SERVING ALL OF TAMPA, the new sewage plant is powered by these two Worthington engines, with a total output of 435 kw.



MAIN CAMSHAFT GEAR. Slots in gear provide single adjustment for retarding or advancing injection timing of all cylinders simultaneously. Final gear adjustment secured with castellated locknuts wired after final tightening.

FREE FLOATING IDLER GEAR.

SPLIT GEAR KEYED ON CRANKSHAFT. Permanent adjustment for perfect alignment with idler gear is easily accomplished.

WORTHINGTON HELICAL STEEL GEAR TRAIN

1. Provides accurate and positive control of engine timing.
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3. Uses controlled automatic oil jet lubrication that eliminates wear.
4. Assures correct engine timing . . . keeps engine running smoothly . . . results in low fuel consumption and minimum engine maintenance.

Worthington engines power Florida's largest sewage plant

Tampa's new sewage treatment plant, Florida's largest, was built in 1950 to keep pace with the city's fast-growing population — which has almost doubled since 1947.

All electrical power for this modern plant is supplied by two Worthington engines; one a spark-ignition gas engine, the other a dual-fuel Diesel. Each drives an Electric Machinery Company generator.

Both engines operate on sewage gas produced during the treatment of raw sewage. When the supply of sewage gas tapers off, however, the dual-fuel Diesel is switched over to Diesel oil.

Operating records of scores of sewage treatment plants show that you just can't beat Worthington engines as economical, dependable power producers. Get all the facts for yourself by writing to Worthington Corporation, Engine Division, Section E.4.7, Buffalo, N.Y. E.4.7

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Municipal and Civic Publications

(*Continued from page 179*)

from a particular periodical. The reader will be able to judge from this grouping which periodicals generally include references on prefrabrication.

The bibliography covers the period January 1948 to June 1954, although some earlier references of significance have also been included. A list of prefabricating firms in various countries is given in the appendix.

Kentucky Prepares More Industrial Reports

INDUSTRIAL RESOURCES — *Prepared by the Kentucky Agricultural and Industrial Development Board, Frankfort, Ky., in cooperation with local organizations of the following communities:*

CADIZ, KY.—*The Trigg County Planning and Development Association. June* 1954. 32 pp.

CLINTON, KY.—*The Clinton Chamber of Commerce. June* 1954. 32 pp.

LAWRENCEBURG, KY.—*The Lawrenceburg Chamber of Commerce. June* 1954. 32 pp.

SEBREE, KY.—*The Sebree Improvement Association. May* 1954. 42 pp.

These reports give industrial location data which manufacturers will find useful in considering expansion possibilities. General setting, labor supply, transportation and markets, production materials, industrial water supply, and electric power, etc, are covered for each municipality.

Other Reports Received

Administration and Government

PHOENIX, ARIZ.—Your City in Action. Two Years of Progress. July 1, 1952—June 30, 1954. To the Citizens from the Office of the Mayor, Frank C. Murphy. Illus. 23 pp.

SAGINAW, MICH. — 1953-54 Progress Report on Your Local Government. Published Annually for the city by *The Saginaw News*, Newspaper Form. Illus. 12 pp.

Air Pollution

MASSACHUSETTS—LAWS Relative to the Control of Atmospheric Pollution. 1954. Department of Public Health, Division of Sanitary Engineering, Room 511, State House, Boston, Mass. 19 pp.

Annual Reports

ANCHORAGE, ALASKA—Annual Report, 1953. Prepared by the Office of the City Manager. Illus. 24 pp.

CLEVELAND, OHIO — Annual Report to the People, 1954-55. Prepared by Herman Bonchek, Chief of Bureau Information. Illus. Tables. 96 pp.

DETROIT, MICH.—1953 Annual Report. Detroit Metropolitan Area Regional Planning Commission, 1002 Cadillac Square Bldg., Detroit 26, Mich. Illus. Maps. 24 pp.

MCCANDLESS TOWNSHIP, PA.—Municipal Report. October 1954. Available from Township Office, Jackson Bldg., 8220 Perry Highway, Pittsburgh 27, Pa. Unpaged.

OGLESBY, ILL. — 24th Semi-annual Report, May 1, 1954, to October 31, 1954. Prepared by Edward Hand, City Clerk. Tables. 35 pp.

REPRESENTATIVE MUNICIPAL BOND ISSUES

December 1 to December 10, 1954

Date of Sale			*Purpose*	*Average Maturity (Years)*	*Net Interest Cost Per Cent*
12/1/54	El Paso Co., Colo. .	$3,300,000	School District	10¾	1.732
12/2/54	Hopkinton, R. I. . . .	300,000	School Building and Equipment	15½	2.71
12/2/54	Clyde, Ohio	56,600	Street Improvement	6½	1.908
12/6/54	Boone Co., Ind. . . .	700,000	Hospital	10½	1.864
12/6/54	Oakland City, Ind. .	12,000	Fire Equipment and Construction	4	2.14
12/6/54	Reno, Nev.	125,000	Street and Alley Improvement District	5½	2.77
12/7/54	Molalla, Ore.	210,000	General Obligation	7½	3.31
		90,000		17½	
12/7/54	Delanson, N. Y. . . .	35,000	Water	15	2.97
12/7/54	Bergenfield, N. J. . .	108,000	General Improvement	6	1.89
12/7/54	East Whittier, Calif.	332,000	School Dist. Bldg.	11-5/6	2.49
12/8/54	Brick Tp., N. J. . . .	60,000	Municipal Building	8	2.83
12/8/54	Pawtucket, R. I. . . .	200,000	Building Reconstruction	5½	2.26
12/9/54	Chelsea, Mass.	51,000	Municipal Relief	2-5/6	1.55

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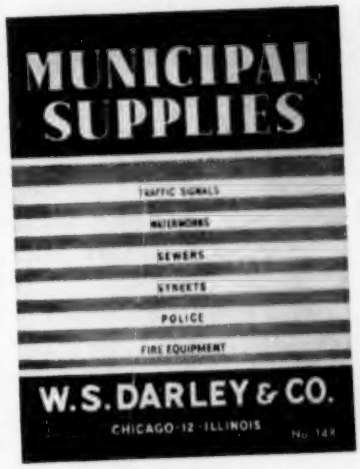

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Civil Defense

EVANSTON, ILL.—What You Should Know About Evanston Civil Defense. Available from Evanston Civil Defense Corps, Municipal Bldg., Evanston, Ill. Illus. 15 pp. 15 cents.

MILWAUKEE, WIS. — Printed Edition "Reduction of Vulnerability in the Milwaukee Area," by Oscar Sutermeister. Obtainable from Joseph J. Krueger, Treasurer, 8814 W. Lisbon Ave., Milwaukee 16, Wis. $1.50.

Finance and Taxation

COLUMBIA, MO.—Annual Budget 1954-1955, Fiscal Year Ending September 30, 1955. Available from Director of Finance, William Estel Palmer. Tables. 124 pp.

DALLAS, TEXAS — Annual Financial Statement. Fiscal Year October 1, 1953, to September 30, 1954. Submitted by E. Lynn Crossley, City Auditor. Tables. 107 pp.

DETROIT, MICH.—Annual Report by the Auditor General, David V. Addy. For the Fiscal Year Ending June 30, 1954. 1006 Water Board Bldg., Detroit, Mich. Tables. 123 pp.

HOUSTON, TEXAS — Analysis of Property Tax Collections. The Tax Research Association, Houston, Texas. October 1954. Tables. 13 pp.

LUBBOCK, TEXAS — 1954-55 Budget Report. General Budget for Fiscal Year from October 1, 1954, to September 30, 1955. Stephen J. Matthews, City Manager, Lubbock, Texas. 122 pp.

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NEW HAVEN, CONN.—Supplement No. 2 to Report No. 35, "Assessment of Real Estate." New Haven Taxpayers Research Council, Inc., 151 Court St., Room 403, New Haven 10, Conn. Tables. 17 pp. Mimeo.

PHILADELPHIA, PA.—Financial Report, 1953. Office of the Director of Finance, Vernon D. Northrop. Illus. Tables. 52 pp.

RANDOLPH, WIS. — It's Your Money We're Spending. Village of Randolph Budget for 1955. Edgar A. Williams, Village Clerk. Maps. 58 pp.

WISCONSIN — A manual on The Issuance of General Obligation Bonds. Issued by the League of Wisconsin Municipalities, 30 E. Johnson St., Madison 3, Wis. August 1954. $3.

GENERAL—Municipal Finance. . . . A Study of Second Class Cities. By Harry O. Lawson, Fiscal Information Series, 2. Governmental Research Center, University of Kansas, Lawrence, Kans. Tables. 38 pp.

Lighting

COLUMBIA, MO.—50 Years of Progress. Water and Light Golden Jubilee, 1904-1954. Presented by the Water and Light Department. 14 pp.

Personnel

PHOENIX, ARIZ. — Gateway to Opportunity. 1953-1954 Annual Report of the Personnel Department. Illus. Tables. Graphs. 36 pp.

Planning, Housing, and Zoning

BALTIMORE, MD. — Neighborhood Improvement. CPHA's Progress Report, 1953-54. Citizens Planning and Housing Association, 319 N. Charles St., Baltimore, Md. Illus. 11 pp.

EAST RUTHERFORD, N. J.—Land Use Plan for the Meadowlands. Master Plan Report 1, September 1954. Passaic-Bergen Community Planning Association's Report to the Planning Board of East Rutherford. Maps. 34 pp.

MODESTO, CALIF.—Forward Modesto. Presented by the Forward Modesto Committee and available from Office of Ross Miller, City Manager, Modesto, Calif. June 1954. Map. Illus.

PARSONS, KANS. — Zoning Survey for Parsons. Governmental Research Center, University of Kansas, Lawrence, Kans. Maps. 36 pp.

NASHVILLE, TENN.—Study and Recommendation for the Location of a Municipal Auditorium. City Planning Commission, Advance Planning Division, 305 City Office Bldg., Second Ave. So. and Lindsley Ave., Nashville, Tenn. Maps. Tables. 28 pp.

OAKLAND, CALIF.—Annual Report, 1953-54. City Planning Commission. Tables. 39 pp.

PATERSON, N. J.—Highway Plan. A Section of the Master Reference Plan. September 1954. Prepared by the Staff of the Paterson Planning Board, under the direction of C. Earl Morrow, planning consultant. Maps. 33 pp.

PHILADELPHIA, PA.—Mill Creek Redevelopment Area Plan. September 1954. City Planning Commission, Market Street National Bank Bldg., Juniper and Market Sts., Philadelphia, Pa. Maps. Charts. 32 pp.

——New Threshold. — Report for 1953. The Philadelphia Housing Authority, Robinson Bldg., 15th and Chestnut Sts., Philadelphia 2, Pa. Illus. 44 pp.

——Public Housing Report to the Community. Vol. IV, No. 4. Philadelphia Housing Authority, Ninth Floor, Robinson Bldg., 15th and Chestnut St., Philadelphia 2, Pa. September to October 1954. Illus. 7 pp.

SOMERSET COUNTY, N. J. — Planning Implications of Proposed Quarrying and Processing Operations by the Minne-

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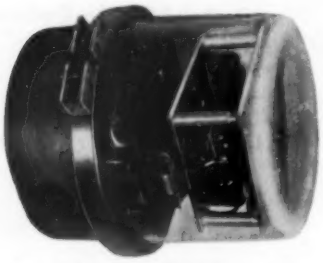

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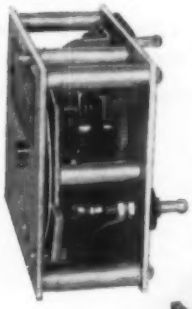

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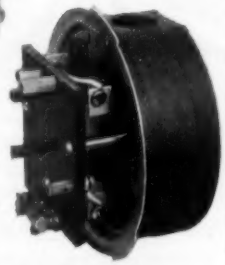

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sota Mining and Manufacturing Company. Prepared by Government Consulting Service, Institute of Local and State Government, University of Pennsylvania, Philadelphia, Pa., for the Planning Board of Montgomery Township, Somerset County, N. J. Maps. 27 pp.

Recreation

LOUISVILLE, MISS. — Recreation in Louisville. A Report to the Citizens by Mississippi State College, The Social Science Research Center, State College, Miss. 24 pp.

Sewage and Sewerage Treatment

GRAND RAPIDS, MICH. — Annual Report on Operation of the Sewage Treatment Works for the Year 1953-1954. 24th Annual Report of the Public Service Department. Graphs. Tables. 28 pp.

Street Construction and Highway Maintenance

GENERAL—Modernization with Soil-Cement, by S. C. McCarty. Soil-Cement Subgrade on Hollywood Freeway, by F. B. Cressy. Soil-Cement Reduces Maintenance in Camden County, N. J., by Albert Wise. Technical Bulletin No. 208. 1954. Published by American Road Builders' Association, World Center Bldg., Washington 6, D. C. 19 pp. 50 cents.

Traffic

GENERAL—Women in Traffic Enforcement. Research Reports. The United States Conference of Mayors, 730 Jackson Place NW., Washington 6, D. C. 3 pp.

Voting

GENERAL — Model Voter Registration System. Fourth Edition 1954. Prepared by Joseph P. Harris, Chairman, and The Committee on a Model Voter Registration System. National Municipal League, 47 E. 68th St., New York 21, N. Y. 56 pp.

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CHICAGO, ILL. — Annual Report, 1953. Department of Water and Sewers, Commissioner's Office, Chicago 2, Ill. Illus. Graphs. Maps. 27 pp.

GENERAL—Ohio River Valley Water Sanitation Commission's 6th Annual Report, 1954. Ohio River Valley Water Sanitation Commission, 414 Walnut St., Cincinnati 2, Ohio. Maps. Tables. 24 pp.

Miscellaneous

DETROIT, MICH.—A Social Profile of Detroit 1954. A Report of the Detroit Area Study of The University of Michigan, Ann Arbor, Mich. Tables. 29 pp.

GENERAL—Community Relations. A Summer Seminar for Practitioners. July 19-23, 1954. New York State School of Industrial and Labor Relations, Cornell University, Ithaca, N. Y. Mimeo. 58 pp.

——Report of the 39th National Conference on Weights and Measures, 1954. National Bureau of Standards, Office of Scientific Publications, Washington 25, D. C. 108 pp.

——Federal Policy on Toll Roads. An NHUC Research Report, prepared by J. Allyn Preston. October 27, 1954. National Highway Users Conference, National Press Bldg., Washington 4, D. C. Mimeo. 4 pp.

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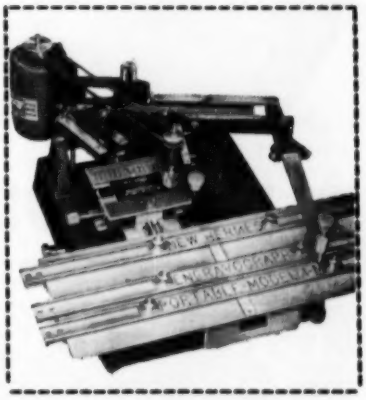

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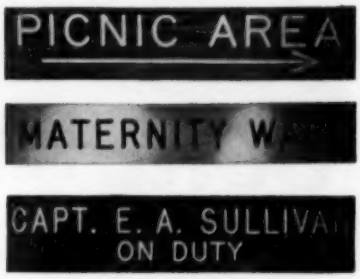

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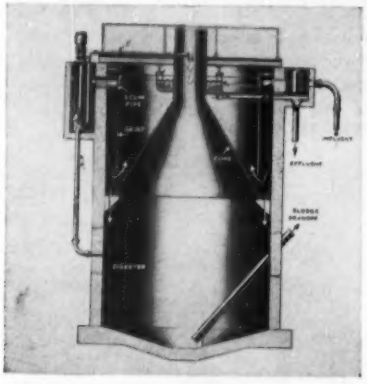


Small cities needn't incur a large-city type debt to get efficient sewage treatment, according to the LAKESIDE ENGINEERING CORP., 222 W. ADAMS ST., CHICAGO 6, ILL. This company is offering a small-size, self-contained sewage treatment plant at a price in keeping with the little-city budget. Called the Spiragester, it consists of a Spiroflow Clarifier, with digestion tank beneath it.

The Spiragester is cylindrical in shape. A vertical steel skirt is mounted inside of the cylinder, paralleling the wall, and extending down a considerable distance into the liquid. A steel cone is mounted inside of the skirt with the top of the cone extending above the top of the Spiragester, and the cone resting on wall corbels below the skirt bottom. The bottom of the cone is nearer the wall than the skirt, thus, a gas seal is formed between the skirt and the cone.

Sewage enters the upper portion of the raceway between the skirt and the wall, in a tangential manner, which causes the sewage to flow around the race and, at the same time, travel downward to the bottom of the skirt. At this point, the effluent flows upward inside of the skirt to the centrally located collection trough, while the settleable solids drop into the lower digestion compartment through the opening between the bottom of the cone and the Spiragester wall.

A unique feature of the Spiragester is the recirculation of active digester liquor into the top of the cone, which breaks up the scum at the high point of highest concentration.

The unit has the added advantage of being readily changed into a digester if the city outgrows it. The concrete corbels which support the steel cone can, if desired, be used to support a floating cover of a digester.

In addition to the Spiragester, Lakeside Engineering offers the Trebler Sampler, consisting of rotating, chain-driven scoops mounted on an aluminum frame so that they dip into the channel at timed intervals. The sampler has a variety of scoops which can be used, depending on the type of waste to be sampled.

Further data on the Spiragester and Trebler Sampler are available directly from the manufacturer, or you may use the Post Card on the colored page in this section. Circle No. 873.

Accurate Water Meters Provide Full Revenue

To assure your municipal water department maximum revenue, the meters you install must be on the job 24 hours a day, measuring not just a large part, but *all* of the water that is pumped. A current advertising series of the BUFFALO METER CO., 2902 MAIN ST., BUFFALO 14, N. Y., tells how American meters assure this full revenue, explaining the popularity of these dependable units in efficient water departments throughout the country.

The first of three outstanding features incorporated in American meters consists of an extra thick measuring disc which forms an effective seal against slippage. The disc is your assurance of accurate measurement. Secondly, safety from freezing is provided by a special frost bottom that breaks quickly, relieving pressure and avoiding damage to the internal mechanisms. A third advantage is quiet operation, a good will feature bound to be popular with the customers.

American meters include fewer working parts, interchangeable in old or new meters. This means less work in the meter shop and reduced maintenance costs. It is one of the reasons why American meters have remained in operation up to 40 years, providing dependable service.

Revenue-conscious water officials can get complete information on American meters by writing directly to the company, or take advantage of the Post Card on the colored page in this section. Circle No. 869.

New Plastic Street Markers Are Easy To Install

Quickly bonded directly to the pavement, these new, plastic street markers are easily installed without drills, dies, patterns, or street-defacing nails and spikes. The markers are made of Bakelite vinyl resins, a tough vinyl plastic that is clearly visible and offers high resistance to the effects of weather, greases, oils, acids and salts. They are available from the ROBBINS TIRE & RUBBER CO., INC., TUSCUMBIA, ALA.

To install the new, long-wearing markers, a strong adhesive compound is brushed into the pavement, covering an area slightly larger than the marker. A film shield of Bakelite polyethylene is then stripped from the adhesive-coated back of the marker, and the unit is laid in place and pressed down by foot. In hot, dry weather, the markers require from two to three minutes to dry. A slightly longer drying period is required in humid weather.

Installed with a strong adhesive compound, the new plastic markers may be combined to form any pattern.

Robbins Lifetime Vinyl Street Markers, made of Bakelite vinyl resins, are available in a standard 3 by 6-inch size, either rectangular or diagonal, in white or traffic yellow. For additional data, write the company directly, or you may use the Post Card on the colored page in this section. Circle No. 875.

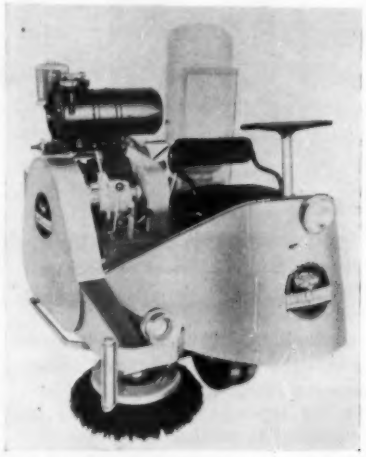
New Sweepers Expedite Street Cleaning

Four new models have been included in the 1955 line of power sweepers introduced recently by the WILSHIRE POWER SWEEPER CO., GLENDALE 4, CALIF. The entire Wilshire line features seven sweepers, each of which is specifically designed for efficiency in cleaning warehouse-type floors and city streets, particularly where crowded conditions tend to prohibit the use of larger machines.

Three of the new models, Series 1200, Series 1000 and Series 900, are designed for sweeping 36- or 48-inch paths, and may be used effectively wherever a rider-type unit is expedient. A fourth unit, Model 800, sweeps both indoors and out, covering a 24-, 36-, or 48-inch path, and offers the operator a choice of walking or riding a detachable sulky.

For light sweeping chores, the Model 200 is recommended, and for a complete maintenance unit in one machine, the company offers the new 3-Way Maintainer. The latter unit has been equipped with Hivac dust control for clean, dustless sweeping. Wilshire's Model 3000 Electrisweeper is powered by a storage-battery, and is particularly useful wherever fire hazards exist.

Detailed information on the company's complete line of power sweepers is available directly from the Wilshire Power Sweeper Co., or you may use the Post Card located for your convenience on the colored page in this section. Circle No. 870.



New development in efficient sweeping is the Wilshire Series 1200 power sweeper.

Accurate Car Count Simplifies Traffic Control

A new traffic tally board, the Vary-Tally Multiple-Unit Reset Counter, features 12 Vary-Tallies, three on each side of the board, which count and classify all traffic entering intersections from any direction. Each Vary-Tally is designed with large-size finger keys, enabling the operator to keep up with a rush-hour flow. These keys are constructed of corrosion-resistant steel, and are unaffected by temperature changes.

The Vary-Tally is also available on stands (in tiers) in any one of 66 combinations up to six banks high, and from 2 to 12 units wide. The company offers single-counter Hand-Tallies, counters for parking meters and other metering devices, and wheeled measuring devices.

For complete information, write VEEDER-ROOT INC., HARTFORD 2, CONN., or take advantage of the Post Card on the colored page in this section. Circle No. 876.

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New Truck-Mounted Ditcher

New truck-mounted ditcher, Model 711, travels at speeds up to 45 mph.

Mounted on a 4-wheel drive Dodge Power Wagon, the Barber-Greene Model 711 ditcher travels quickly from place to place, handling a variety of municipal construction and maintenance jobs with speed and efficiency.

The new unit offers a choice of two digging booms, one digging 5 feet deep, the other, 3 feet 6 inches deep. Both booms will dig a hole 8½, 12, 15 or 18 inches wide. To change from one digging width to another, simply remove the teeth and cutter bars, substituting another set.

The operator of the Model 711 ditcher can handle all controls while seated in the cab or standing alongside of the machine. A single valve control regulates the unit's forward "crowding" speed when digging. Forward speeds range from 0 to 13 feet per minute, and three bucket line speeds operate independently of the crowding speed control.

Other important features of this truck-mounted ditcher include a low vertical clearance, a shock-free power transmission, and a reversible soil conveyor which discharges to either side. An auxiliary conveyor is available for carrying the discharge back toward the rear of the machine, facilitating backfilling operations.

The BARBER-GREENE CO., AURORA, ILL., will furnish full details. Write the manufacturer directly, or you may use the Post Card located for your convenience on the colored page in this section. Circle No. 872.

New Southeast Distributor For Veon Chemical

The J. W. Goldsmith Co., Atlanta, Ga., is the new Southeastern distributor for the VEON CHEMICAL CORP., 22-09 BRIDGE PLAZA NORTH, LONG ISLAND CITY, N. Y., according to Jason D. Radding, Veon sales manager. Goldsmith will handle Veon products in Georgia, Alabama, South Carolina, Florida, and part of Tennessee.

The newly appointed Veon distributor was recently awarded a contract by the City of Atlanta to lay some 28,000 feet of 4-inch Veon crosswalk traffic lines at school and downtown crossings. According to Mr. Radding, this is the first contract to be awarded in the Southeast for the application of the new plastic-base street marking compound.

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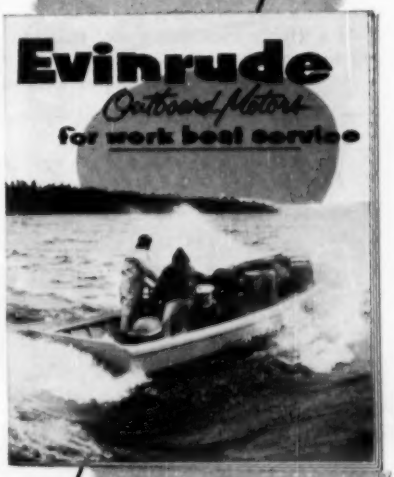


gives you the facts on

modern

OUTBOARD POWER

for

municipal

service

TODAY there's a *new kind* of outboard power for work boat duty! A complete line of new Evinrude *Aquasonic* models so advanced in capability, stamina, and smooth, quiet operation that they set entirely new standards of performance. Get the facts! Send coupon for booklet.

EVINRUDE MOTORS
Division of Outboard, Marine & Mfg. Co.
4626 N. 27th Street, Milwaukee 16, Wisconsin

Send me booklet on outboard power for work boat duty.

Name.....

Address.....

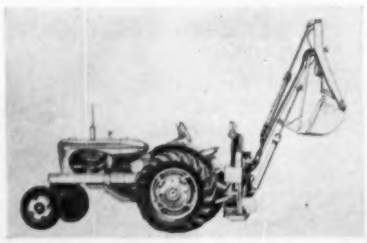
City.....Zone...State.....

(In Canada: Mfd. by Evinrude Motors of Canada, Peterborough)

Combination Wheel Tractor and Backhoe

Power for many small trenching and excavating jobs as well as for a variety of municipal maintenance jobs is provided by the new "Model WD-45" Allis-Chalmers wheel tractor. Equipped with a Henry backhoe, the tractor is available with a number of hydraulically-operated, interchangeable attachments. These include a Henry backfiller blade, straight and angle dozers, a front-end loader, and five buckets, from 16 to 24 inches wide.

The 4,000-pound tractor is powered by an Allis-Chalmers "Power Crater" gasoline engine, developing 45-hp from a 226 cubic inch piston displacement, and a 6.5 to 1 compression ratio. "Power Shift" rear wheels permit quick adjustment of the rear wheel tread with engine power for maximum stability when working on soft ground.



Additional data is available from the ALLIS-CHALMERS TRACTOR DIV., MILWAUKEE 1, WIS., or use the Post Card in this section. Circle No. 856.

HYDRAULICALLY OPERATED VALVES

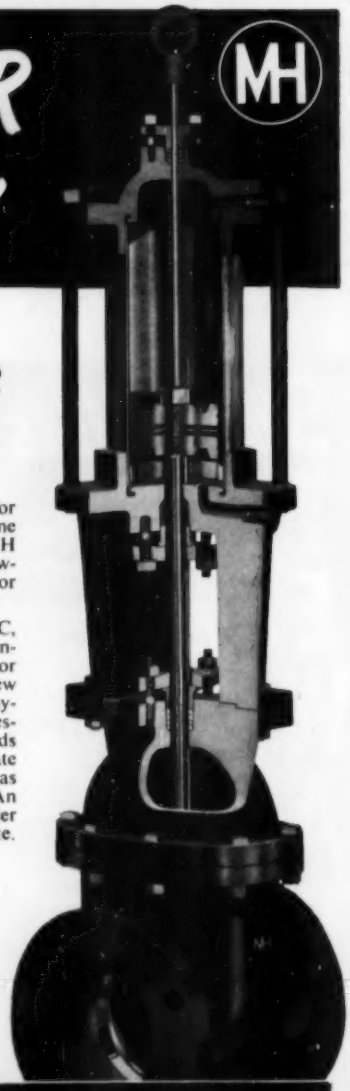
Put WATER To WORK

M H

SEAMLESS BRASS CYLINDER OR BRASS LINED

For frequent operation, remote control or for inaccessible valves, you may use your pipe line water pressure for opening and closing M & H hydraulically operated valves. If desired, however, cylinders operate equally well using oil or air pressure.

All M & H Gate Valves, Classes A, B and C, may be ordered equipped with hydraulic cylinders—brass tube cylinders as illustrated, or brass-lined cast iron cylinders. Outside screw and yoke can be installed to operate the hydraulic valve manually in event operating pressure fails. A bronze tail rod which extends through the top of the cylinder cover to indicate the position of the gates may also be used as a pull rod to operate the gate, if necessary. An adjustable stop may be installed on the cylinder cover to control the degree of opening of the gate.



The size of the cylinder depends on the size of the valve, water pressure available for hydraulic operation, and water pressure against the gates. For complete information, write or wire M & H VALVE AND FITTINGS COMPANY, Anniston, Alabama.

M&H PRODUCTS FOR WATER WORKS • FILTER PLANTS INDUSTRY • SEWAGE DISPOSAL AND FIRE PROTECTION

Electric Rock Drill

It's easy to construct and maintain city streets with the new Bosch electric rock drill. Operating without an air compressor, the unit drills blasting holes, wedge holes, split holes and anchor holes in the toughest rock, concrete or brickwork. Holes may be drilled up to 18 feet deep with less noise and vibration.

The new rock drill is equipped with a Bosch pressure blower and is operated by a light-weight Homelite generator. Equally effective high-cycle companion pieces include a light-duty pavement breaker and a builder's hammer for chipping, spading, vibrating, and nail driving.

Bosch electric tools are available from the HOMELITE CORP., 112 RIVERDALE AVE., PORT CHESTER, N. Y. Write directly, or you may use the Post Card in this section. Circle No. 863.

New Base Stations For Mobile Radio Systems

Two complete Du Mont base stations for police department mobile radio systems are announced by Allen B. Du Mont Laboratories, Inc. The units, designed for the 25-54 megacycle and 450-470 megacycle bands, are for use with two of the company's three mobile receiver-transmitter systems introduced last

SOIL COMPACTION

For Better, Quicker
STREET REPAIRS

Use BARCO RAMMERS

HERE is a BETTER, QUICKER, CHEAPER way to repair streets when holes or trenches are dug in paved areas. Instead of (1) mounding up the backfill and waiting for it to settle, or (2) using expensive granular replacement fill, do as others are now doing – Use Barco Rammers to get HIGH DEGREE COMPACTION of original backfill *immediately*. No waiting to restore paving! No dangerous bumps or holes left in streets! No expensive "call backs" to work on holes! SAVE WITH BARCO!

ASK FOR DEMONSTRATION

The Barco Rammer is a new tool with many uses! Tamps backfill to 95% compaction at amazingly low cost — Let us show you actual figures. Ask for our nearest distributor to give you a demonstration.

• Send for CATALOG No. 621

BARCO MANUFACTURING COMPANY
5358 Hough St.
Barrington, Ill.
(A Chicago Suburb)

Builders of Portable Gasoline HAMMERS and RAMMERS

Purchasing

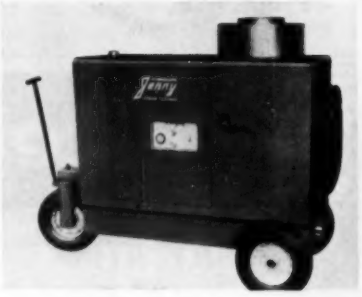
year, and for other mobile equipment as well.

The two new units are called the Type MCA-151-A and Type MCA-450-A and MCA-451-A. The latter two are modifications of the same base station for operation in different portions of the same band. The Type MCA-151-A is for operation in the 25-54 mc band, and the Type MCA-450-A and MCA-451-A are for operation in the 450-470 mc range.

Both base stations incorporate a transmitter, receiver, termination panel, and power supply in single metal desk-mounting cabinets with front and rear doors.

For complete information, write the MOBILE COMMUNICATIONS DEPT., ALLEN B. DUMONT LABORATORIES, INC., 1500 MAIN AVE., CLIFTON, N. J., or take advantage of the Post Card on the colored page in this section. Circle No. 860.

New "Hypressure" Jenny For Heavy-Duty Cleaning



A quick, easy way to clean municipal trucks, machinery and equipment, is to use a Hypressure Jenny steam cleaner offered by the HOMESTEAD VALVE MFG. CO., CORAOPOLIS, PA. Nine models are included in the new Series "1800" line; each featuring 180 gallons per hour steam cleaning capacity for removing heavy deposits of grease and dirt. Two of these models offer finger-tip control of flushing and rinsing with capacities up to 480 gallons per hour.

The new steam cleaners are designed for either single gun or two-gun operation, and are available oil- or gas-fired in stationary or portable types. For field use, the units are available with a gasoline engine drive in place of the electric motor.

For full facts on the new Series "1800" line of steam cleaners, write directly to the Homestead Valve Mfg. Co., or you may use the Post Card on the colored page in this section. Circle No. 864.

MAKE CHANGE • SORT COINS • COUNT COINS • WRAP COINS • AUTOMATICALLY

Beat the coin handling problem— Make it Automatic while you are making it Accurate!

COUNTER
Counts 2,000 coins per minute accurately and wraps them for deposit. Electric and manual models.

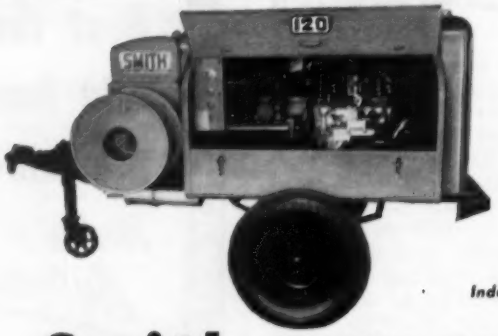
SORTER
Sorts 1,000 coins per minute— every minute. Two models, electric and manual.

CHANGER
Increase revenue by providing proper coins. Coin changers for every changing need.

See your local distributor or write for his address and complete catalogs.

KLOPP
ENGINEERING, INC.
35551 Schoolcraft • Livonia, Mich.

In Canada
E. A. Horton Sales Co.
3071 Bloor St., W.—Toronto 18.



Model 120-P

Powered by CHRYSLER Industrial Engine

Smith 120-P air compressor

Operates all these tools—for less!

- ✓ Two 80-lb. paving breakers.
- ✓ Two 80-lb. sheeting drivers.
- ✓ One 50-lb. rock drill.
- ✓ Four backfill tampers, or two concrete vibrators.

Write for complete facts and names of nearest dealer!

CUTTING COSTS FOR CONTRACTORS— Maine to California!

The Smith 120-P gives operating economy that big compressors can't approach. Goes where big, bulky compressors can't go. Powered by heavy-duty Chrysler Model 22 Industrial Engine. Simple, compact design—minimum fittings, gaskets, etc. to break down or cause trouble. No couplings, no clutch. Finned aftercooler reduces air temperature approx. 200°, gives longer hose life!

Also the Smith 70-P Compressor

GORDON SMITH & CO., Inc.

425 College Street
Bowling Green, Kentucky

White

PORTABLE ASPHALT PLANT

MODEL L-8, 10-15 TON CAPACITY

Stationary Plants L-12 and L-25, 15-30 ton capacity.

A *COMPLETE* ASPHALT PLANT ON ONE CHASSIS . . . DRYER, MIXER, HEATING KETTLE. Low in cost, small enough to tow, BIG enough to produce HOT mix, (or any other bituminous mix) for driveways, parking lots, street maintenance, etc. Equipped with 50 HP LeRoi engine, air operated gates for *one* man control, divided compartment, reciprocating feeder for proportioning aggregate. Available as stationary plant with 30 HP electric motor.

Write for catalog and name of nearest dealer.

White MANUFACTURING COMPANY

ELKHART 1, INDIANA

Purchasing

Echelon Spreading Speeds Ice Control

An echelon spreading feature has been added to the new Highway Model J spreader, enabling the unit to spread salt, cinders, sand and calcium chloride in patterns formerly associated with hand shoveling. The spread is laid on the street in ridges said to "travel with the traffic." These ridges have a tendency

Raising and lowering of the dump body is unaffected by the amount of material contained in the spreader hopper.

to melt first, permitting the water to get under the ice. Thus, the ice melts quickly, less material is used, and less is thrown off of the street by passing motorists.

Blanket spreading, too, is easy with the new Model J. The unit will spread wet or dry materials—from fine sand to 1-inch road stone—forward or reverse. It is designed to fit any width dump body, and is attached to the truck frame, eliminating any weight on the dump body itself. The spreader is installed in minutes by hooking two log chains and putting in hitch pins.

Ideal for ice control and seal coat work, the Model J spreader is made by the HIGHWAY EQUIPMENT CO., INC., 616 D AVE., N. W., CEDAR RAPIDS, IOWA. For complete information, address the manufacturer directly, or you may use the Post Card on the colored page in this section. Circle No. 862.

Portable Fire Pump

Use the new Marlow portable pump for fire-fighting, for booster service, and as an emergency civil defense pump. Powered by an 8½-hp gasoline engine,

the unit produces sufficient high capacity and pressures to effectively operate one 2½- or two 1½-inch lines. The pump is available on a welded steel base and is equipped with spring loaded and retractable handles. It measures 21⅝ inches long, 20½ inches wide, and 22 inches high, and weighs about 160 pounds.

As a fire-fighting unit, the Marlow portable pump is swiftly carried through brush and over rough ground to water sources not readily accessible to a truck. The performance ratings of the new fire pump show 100 gallons delivered at 80 pounds pressure, with over 100 pounds pressure available for fog or foam operation.

Used for booster service, the Marlow fire pump will push water up hills and over long distances from inaccessible ponds or streams, to supply a pumper or tank truck. According to the manufacturer, it will relay enough water through 300 feet of 2½-inch hose and up a 75-foot hill, to supply a pumper operating two ½-inch nozzles at 100 pounds pressure.

Further information on the new Marlow portable fire pump is obtainable from MARLOW PUMPS, DIV. of BELL & GOSSETT CO., RIDGEWOOD, N. J. Write the manufacturer directly, or you may use the Post Card located for your convenience on the colored page in this section. Circle No. 881.

Low-Cost Way to Install Parkway Cable

End of cable is threaded through the guide rings on the Ferguson tractor and the guide tube on the subsoiler beam.

A special guide tube has been added to this subsoiler, transforming it into an efficient pipe and cable layer for installing parkway cable underground. Easily attached to a Ferguson tractor, the new tool installs flexible cable, ½- to 1½ inches in diameter, up to 18 inches deep. The guide tube conducts the cable into the bottom of the cut, and the guide rings, mounted on the tractor, conduct the cable back to the guide tube.

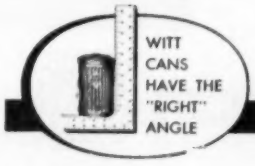
To install parkway cable, an exploratory subsoiling pass is made with the tractor and subsoiler, clearing roots and other underground obstructions. The length of cable is then laid out right alongside the cut. At the beginning of the route, cable is threaded through the front guide ring on the tractor, the rear guide ring, and the guide tube attached to the subsoiler beam. When the tractor is driven forward, the subsoiling beam goes deep into the ground, and the cable slips through the guides and is automatically deposited at the bottom of the subsoil cut.

After the cable is installed, the resulting slight ridge in the ground is leveled by driving over it with the rear tractor wheel.

The FERGUSON DIV., MASSEY-HARRIS-FERGUSON INC., RACINE, WIS., will furnish full information. Write directly, or you may use the Post Card on the colored page in this section. Circle No. 853.

WITHSTANDS YEARS OF ABUSE . . .

Years of abuse and hard usage is the destiny of probably every WITT Can. Yet, have no fear —they're designed for punishment—will outlast 3 to 5 ordinary cans. Take a good look at a WITT Can or Pail— Notice the heavy gauge steel, the deep rolling corrugations, the steel bands and the rigidity of the straight sides. Quality's the word for it—quality, so certain, that every WITT Can is Guaranteed. When you buy Cans, make sure they're WITT.



WITT Cans
"Originators of the Corrugated Can"
THE WITT CORNICE COMPANY
2139 Winchell Ave., Cincinnati 14, Ohio

THE GREATER, MORE DEPENDABLE LIGHT OF

amplex

Mercury Vapor Lamps

IS A PROVED DETERRENT TO

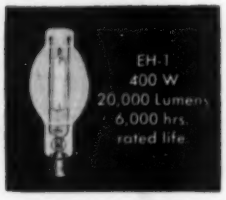
CRIME

TRAFFIC ACCIDENTS

PEDESTRIAN INJURIES

YOU GET

TWICE AS MUCH light for wattage consumed • Burning life several times longer than incandescents • 6,000 HOUR GUARANTEE!



For full information on AMPLEX street lighting and traffic signal lamps, write to **Amplex Corporation, Dept. AC-1, 111 Water St., Brooklyn 1, N. Y.**

Purchasing

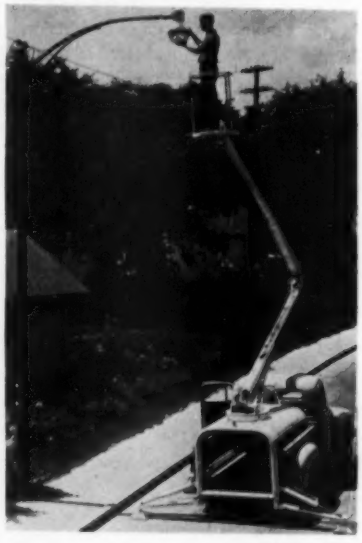
Identifies Outboard Motors

To combat the problem of outboard motor thefts, JOHNSON MOTORS, WAUKEGAN, ILL., has developed a new system of affixing serial numbers that assures positive identification of stolen motors.

Two serial numbers are affixed to the motor—one in the usual place for easy reference, the other on a metal plug which is inserted in the cylinder block. This plug cannot be removed without leaving a permanent mark on the cylinder.

Owners of Johnson motors register the numbers of newly purchased motors with the Johnson factory. When the motor is reported stolen, this serial number is circulated to the firm's 3,300 dealers who keep a constant watch for it. Thus, it is virtually impossible for a thief to offer a stolen motor for sale or service work without detection.

Simplifies Overhead Maintenance



An easy, low-cost way to handle streetlight cleaning and replacement and similar overhead maintenance jobs, is to use a new Hi-Ranger extensible personnel tower designed by MOBILE AERIAL TOWERS, INC., 1405 N. CLINTON ST., FORT WAYNE, IND. Series 3 and 4 Hi-Rangers offer maximum platform heights of 32 and 40 feet, and maximum working heights 5 and 6 feet higher. Easy to operate, they feature a single-handed "3-D" control, facilitating safe movement of the operator's platform in one dimension or in all three dimensions simultaneously.

A Series 3 Hi-Ranger is easily mount-

ed on any ¾-ton utility, industrial or pickup-type truck, and is quickly transported at normal traffic speeds. The Series 4 may be similarly mounted beginning with 1½-ton truck sizes. Both units feature booms of seamless steel tubing powered by a new hydraulic system.

Fast acting, retractable hydraulic outriggers on the new Hi-Rangers provide greater stability, permitting platform weight capacities of 250 pounds for the Series 3 and 300 pounds for the Series 4. These capacities may be increased where required.

For additional information on the new Hi-Ranger series, write directly to the manufacturer, or take advantage of the Post Card located for your convenience on the colored page in this section. Circle No. 882.

An Over-the-Cab Tractor Loader

The Austin Overshot Loader makes the standard Caterpillar D4 and D6 tractor into a close-quarter loader, especially handy in most municipal maintenance operations. This loader dozes its loads into its receiving bucket, raises it overhead, and dumps it into the hauling unit without requiring the tractor to maneuver as most conventional tractors do. According to the company, the Austin bucket can be held in any position. The bucket can be raised in eight seconds and lowered in four seconds. It has a capacity of 1.33 yards in the smaller size, and two yards in the larger.

The Overshot loader was on display at the recent APWA Congress held in Atlantic City. It is a product of the CENTRAL OHIO STEEL PRODUCTS CO., GALION, OHIO. For complete information, write the company directly, or you may use the Post Card located for your convenience on the colored page in this section. Circle No. 859.

Thew Shovel to Control Dixie Crane Line

Arrangements have been completed by the THEW SHOVEL CO., LORAIN, OHIO, for purchase of the controlling stock of Dixie Crane and Shovel Co., Inc., of Harrisburg, Pa., according to C. B. Smythe, Thew's president.

Acquisition of control of Dixie Crane and Shovel was made because Thew does not now participate in the low-cost crawler and rubber tire mounted, ⅜-yard, 6-ton shovel-crane market, reports Mr. Smythe. The Dixie Crane line will continue to be manufactured and distributed by Dixie Crane under the same brand name.

Dixie shovel-cranes are available on crawler mounting and factory-mounted rubber-tired carriers. The turntables alone can be mounted on new or used commercial-type truck chassis in the field, or on piers, docks, barges, or ship decks. In the lowest-price bracket, the Dixie line gives heavy-duty performance and is fully convertible to shovel, crane, clamshell, dragline or hoe.

Three officers and directors of Thew Shovel have been elected directors of Dixie Crane and Shovel. In addition to Mr. Smythe, they include Waid V. Clark and Arthur C. Lundgren. David Jenkins, president of Dixie Crane, and Benjamin Jenkins will remain on the board.

When You Order
Mechanical Joint Pipe
SAY McWANE-PACIFIC
"BOLTITE"

Boltite is standardized mechanical joint pipe. Glands, gaskets, bolts and joint dimensions are standardized with all leading pipe makers, and are interchangeable for given sizes of pipe.

Boltite mechanical joint lays fast. Joints are quickly made by unskilled workmen. The only tool needed is a ratchet wrench. There is no lead pot. Joints may be made in a wet trench. The joints are flexible and and stay flexible, allowing for expansion or contraction and settlement without leakage. The joint materials are as durable as the pipe itself—both last for centuries.

For details, write or wire McWANE CAST IRON PIPE COMPANY, Birmingham, Alabama, or PACIFIC STATES CAST IRON PIPE COMPANY, Provo, Utah. (Sales Offices in Principal Cities.)

McWANE PACIFIC PIPE Lasts for Centuries

on the West Virginia Turnpike

TALLER & COOPER BOOTHS safeguard personnel as they serve the public

Weatherproof, accident-proof all steel Taller & Cooper Booths assure safety and comfort for personnel on the West Virginia Turnpike, as they do at parks, parking lots and toll facilities all over the country.

Functionally designed and pre-fabricated, Taller & Cooper Self-Contained Booths are installed in a matter of hours, eliminating long weeks of on-the-site construction. With over 20 years of know-how in the design and manufacture of toll equipment, Taller & Cooper can give you superior custom-planning on any facility you are planning to build or modernize. Call on the nation's first choice . . . Taller & Cooper.

WRITE TODAY for design and construction details.

TALLER & COOPER, INC.

ENGINEERS • MANUFACTURERS

TALLER & COOPER Toll Collection Equipment Is Used On Every Major Toll Facility In The U. S.

TOLL BOOTHS • TOLL COLLECTION SYSTEMS

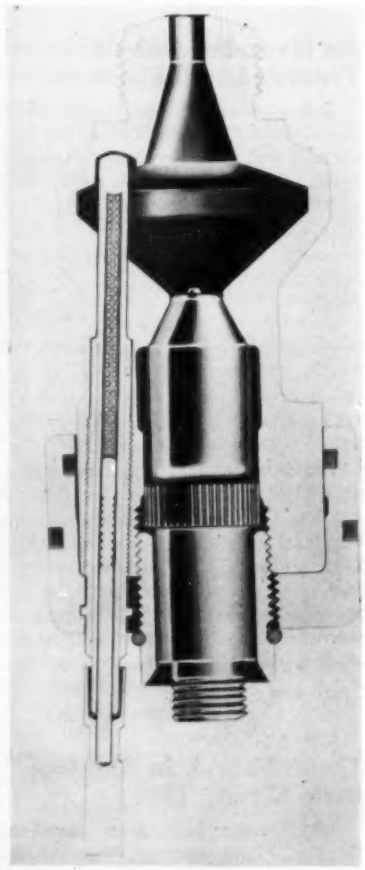
75 FRONT STREET • BROOKLYN 1, N. Y.

Purchasing

Economical Loader Speeds Snow Removal

A new Dearborn Industrial loader mounted on a Ford tractor, is equipped with a sturdy angle dozer blade for fast, efficient snow removal. The economical unit is available from the Tractor and Implement Division of the Ford Motor Co., located in Birmingham, Mich.

Electric Starting System For D4 Tractors



New glow plug attachment reaches a temperature of 1,800° within 30 seconds.

A new, 24-volt electric starting system for Caterpillar D4 track-type tractors, incorporates a special glow plug developed by the Caterpillar Tractor Co.

in cooperation with the General Electric Co. This glow plug attachment provides positive starting in below freezing weather. It eliminates prolonged cranking of the diesel engine and extends the life of the battery.

About the size of an ordinary pencil, the glow plug is actually a heating element, part of which extends into the precombustion chamber of the diesel engine. The plug heats the air in the chamber quickly, helping to ignite the fuel which is injected onto the chamber when the engine is cranked.

Full details on the new D4 tractor, equipped with all-weather electric starting, is available from the CATERPILLAR TRACTOR CO., PEORIA 8, ILL. Write directly, or you may use the Post Card located on the colored page in this section. Circle No. 877.

Efficient Refuse Collection

A "one-finger" control lever starts the automatic loading and packing cycle in the new Colectomatic refuse collection body. The refuse is swept out of the loader hopper and into the body by a bulldozer-type packing plate, and in just

22 seconds, garbage and refuse are packed with 22 tons of pressure.

The new refuse body is designed with a short overall length, facilitating travel in narrow alleys and other restricted areas. A steel plate which is an integral part of the body floor, keeps liquids from draining out to the street or back into the loading hopper. Loading is simplified by a low-loading sill, 36 inches wide.

When service is necessary on the Colectomatic, the mechanic simply opens one or all sections of a 3-partition door which covers the tailgate mechanism. This enables him to handle most maintenance jobs from a standing position.

Additional information on this refuse-collection unit is available from THE HEIL CO., DEPT. 4315, 3043 W. MONTANA ST., MILWAUKEE 1, WIS., or you may use the Post Card located for your convenience on the colored page in this section. Circle No. 880.

FOR ACCURATE REMOTE MEASUREMENT

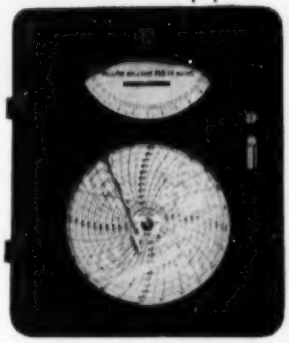
of Flow, Liquid Level, Pressure

NEW! SIMPLEX ORTHOFLOW®

• Now you can transmit data accurately over great distances for instant reference at central or control points.

TRANSMITTER – Compact new electric unit actuates both in-plant and remote meters . . . unaffected by normal variations in voltage, temperature. Simple, dependable, rugged. Accuracy of ±2% at any point over wide flow ranges.

RECEIVER – Time-proven Simplex H Meter. Precisely duplicates transmitted data . . . automatically resets to correct data after power interruptions. Indicates, records, totalizes. Easy-to-read flow scale and chart.



SIMPLEX VALVE & METER COMPANY

Dept. AC-1, 7 E. Orange St., Lancaster, Pa.

Write for Brochure

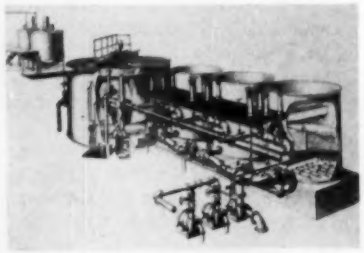
SIMPLEX®

VALVE AND METER COMPANY

Low-Cost Water Treatment For The Small Community

Cost-conscious communities are offered economical water treatment in the form of a compact, integrated package-type plant. Designed by the Graver Water Conditioning Co., this new plant integrates all equipment from inlet to outlet, including the clear well, chlorinator, wet or dry chemical feeders and proportioners, gravity or pressure filters, recarbonator, level and flow controls and instruments, and interconnecting piping. Standard layouts for the complete plant are available in a wide range of capacities from 0.1 to 2.0 MGD. Special layouts may be obtained in larger capacities.

The heart of this low-cost water treatment plant is the Graver Reactivator, a cold-process water treating unit used for the selective or simultaneous removal of turbidity, color, organic matter, taste, odor, iron, manganese and hardness from water supplies. It is a self-contained



Sketch of a typical Graver Reactivator package water treatment plant.

high rate unit of the solids-contact type, embodying within a single tank all of the established functions of coagulation, flocculation, sedimentation and sludge removal.

Detailed information on the new package water treatment plant is available from the GRAVER WATER CONDITIONING CO., 216 W. 14 ST., NEW YORK 11, N. Y. Write directly, or you may use the Post Card on the colored page in this section. Circle No. 868.

IF YOU HAVE EXPERIENCED

Water Shortage—Surge—Unnecessary Waste

INSTALL ROSS VALVES FOR CONTROL OF WATER STORAGE, SUPPLY CONDUIT AND DISTRIBUTION PRESSURES

ROSS SINCE 1879

MANUFACTURERS OF AUTOMATIC HYDRAULIC CONTROL VALVES AND SPECIALTIES

PRESSURE REDUCING VALVE

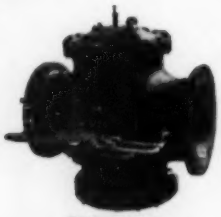
SURGE RELIEF OR BACK PRESSURE VALVE

OTHER ROSS PRODUCTS:

FLOAT VALVES
STRAINERS

HYDRAULIC BOOSTER PUMPS FOR CHLORINE FEED

HYDRAULIC AND ELECTRIC CONTROLLED VALVES



ALTITUDE VALVE

ROSS VALVE MFG. CO. INC.

8 Oakwood Ave. Troy, N. Y.

Clears More Snow Faster

Equipped with a 16-foot swivel discharge conveyor, the new S-11 Snow Loader permits even the largest trucks to be loaded either "over the cab" or alongside. There is no need for the trucks to turn or back-up under the loader. The aluminum conveyor gives a discharge clearance of 11 feet-6 inches

from the ground and may be hydraulically swung 45° from either side.

In addition to loading "over the cab," the S-11 is particularly effective in depositing snow away from curbs, traffic lanes, bridges, overpasses and municipal parking lots. The unit features a capacity up to 20 cubic yards per minute, an overall working height of 12 feet-10 inches, and a travel height of only 9 feet-10 inches. All loader operations are hy-

draulically controlled from the cab.

The new S-11 Snow Loader is made by the N. P. NELSON IRON WORKS, INC., 850 BLOOMFIELD AVE., CLIFTON, N. J. For full information, write the manufacturer directly, or you may use the Post Card on the colored page in this section. Circle No. 861.

New Excavator-Crane Movie

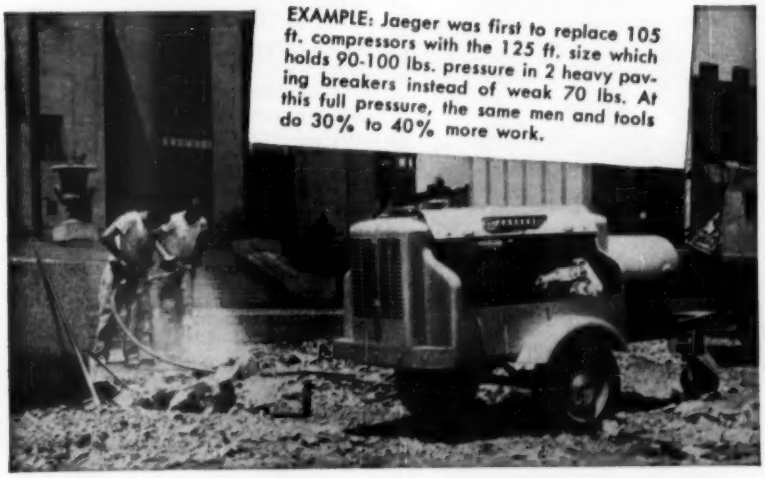
New Hystaway excavator-crane mounted on a Caterpillar track-type crawler tractor.

"Design for Excavating," a new 16 mm color film, with sound, shows the many advantages of the ½-yard excavator-crane mounted on a heavy-duty crawler tractor.

This 12-minute movie was filmed at actual job sites and stars the Hyster Hystaway mounted on a Caterpillar-built tractor. In it, the machine is quickly converted to a shovel, backhoe, dragline, clamshell, crane, pile driver and bulldozer.

"Design for Excavating" is available for showing from the HYSTER CO., 2902 N. E. CLACKAMAS ST., PORTLAND 8, ORE. Write directly, or you may use the Post Card on the colored page in this section. Circle No. 865.

Jaeger "air plus" puts full wallop into any set of tools


EXAMPLE: Jaeger was first to replace 105 ft. compressors with the 125 ft. size which holds 90-100 lbs. pressure in 2 heavy paving breakers instead of weak 70 lbs. At this full pressure, the same men and tools do 30% to 40% more work.

75 ft.
125 ft.
185 ft.
250 ft.
365 ft.
600 ft.

Comparable increases in production are obtained with all 6 Jaeger "new standard" ratings. Their performance has been proved-in-use by thousands of units in the field. First cost and operating cost, per cu. ft. of 100 lb. air, is far below any "old standard" size machine.

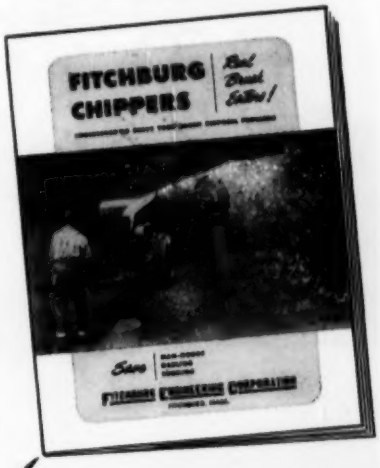
See your Jaeger distributor or write for Catalog JC-1.

THE JAEGER MACHINE COMPANY
505 Dublin Avenue
Columbus 16, Ohio

LOADERS • PUMPS • MIXERS • TRUCK MIXERS • PAVING MACHINES

Save—

MAN HOURS
HAULING
BURNING



New, FREE BOOKLET tells about

LOW-COST BRUSH DISPOSAL

Read how leading tree surgeons, power companies, municipalities, utilities use Fitchburg Chippers to cut disposal costs up to 50%—create customer good will.

Whatever your brush disposal problem, you will more than likely find the answer right in this new booklet, packed with valuable facts, specifications, and suggestions.

Learn how a Fitchburg Chipper can increase the efficiency of your operation. Mail the coupon for your Fitchburg Chipper booklet today.

TEAR OFF and MAIL

FITCHBURG ENGINEERING CORPORATION
Dept. AC-15, Fitchburg, Massachusetts

Send me the New Chipper Booklet!

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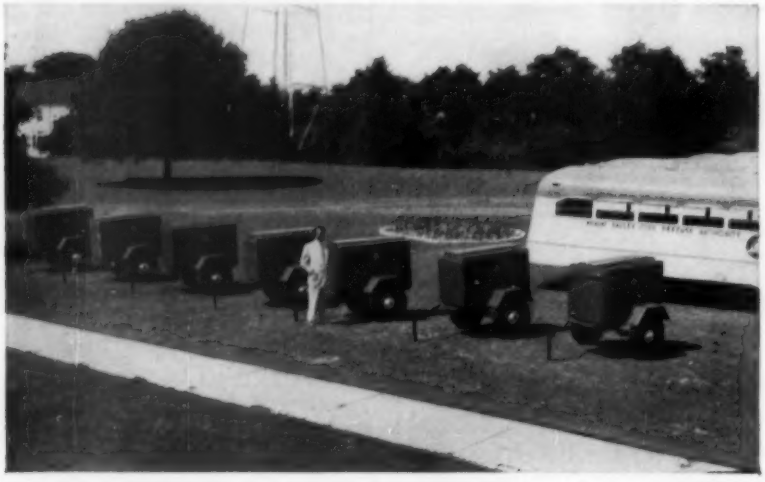
Address_____

City_____

State_____

Ready to Roll...
wherever and whenever disaster strikes!



Seven mobile Onan Electric Plants assure emergency light and power for Miami Valley (Ohio) Civil Defense Organization

Within a few minutes after a critical power interruption occurs anywhere in the area, one of these Onan "CW" Electric Plants can take over the power load. Mounted on a high-speed trailer, it can be rushed to any spot by car, truck or tractor to supply power for communications, first-aid stations, hospitals, feeding stations, floodlighting disaster areas, powering motor-driven rescue equipment and for maintaining many types of municipal services.

Onan mobile emergency electric plants are a vital ally in the Miami Valley's line of defense against disasters, whether nature or man-made.

A Powerhouse on wheels! 5,000 or 10,000 watts

The Onan "CW" is unusually compact, lightweight, and quiet-running. Powered by Onan two-cylinder, suction-air-cooled gasoline engine built for heavy-duty service. Wide range of accessories include: skid, battery rack, 9-gallon fuel tank, weatherproof housing, 2-wheel trailer and 4-wheel rubber-tired dolly.

Model 10CW, trailer mounted

Other Onan models from 400 to 100,000 watts

Write for Civil Defense Manual SP1030

D. W. ONAN & SONS INC.

UNIVERSITY AVE. S.E. • MINNEAPOLIS 14, MINNESOTA

Purchasing

New Pressure Joint For Clay Sewer Pipe

Designed for vitrified clay pipe up to 36 inches in diameter, this new pressure joint provides for the fast, economical installation of clay sewer pipe under all trench conditions. The joint is introduced by the Clay Sewer Pipe Association, eastern regional association of the National Clay Pipe Manufacturers. It is available from the 15 member manufacturers of the Association.

The new pressure joint utilizes a hol-

low rubber gasket, similar to a tire inner tube, which is placed around the spigot end of the clay pipe and inserted into the bell end of the adjoining length. The pressure joint is completed—simply and efficiently—after a grout mixture is pumped through a small valve.

The self-aligning pressure joint is reported extremely successful in wet trench installations. It solves infiltration problems, improves flow characteristics, and provides the needed flexibility to absorb vibrations.

A new 6-page brochure describes the pressure joint and provides detailed installation instructions. For your copy, write the Clay Sewer Pipe Association, 311 High-Long Bldg., 5 E. Long St., Columbus 15, Ohio, or take advantage of the Post Card on the colored page in this section. Circle No. 854.

Improved Tractor-Shovel

A torque-converter drive has been added to the Hough Model HFC Payloader, providing fast operation, increased output and lower maintenance costs. This versatile tractor-shovel has a bucket capacity of 1 cubic yard Payload, and ¾ cubic yard struck. It features a new Hough-built transmission with four speeds forward and four re-

What's your
GATE VALVE
MORTALITY

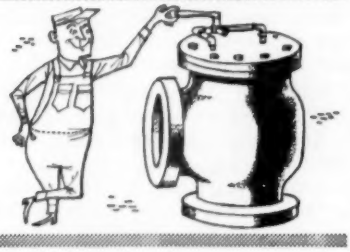
on installations requiring frequent opening and closing?

REPLACE *them*
with **G-A**
FLOWTROL VALVES

✓ *Use the Angle Body and Save the Price of an Elbow Fitting*

✓ *Built to Last a Lifetime*

✓ *Operates with Finger Pressure*



HERE'S PROOF:
One of America's large railroads had a 6" gate valve installation that operated on the average of 55 times a day. In addition to frequent repairs, this valve had to be entirely replaced every 3 months.

In the Fall of 1947, this valve was replaced with a 6" G-A Flowtrol Valve. Now—more than 7 years later—this valve is still operating perfectly and not one parts replacement has been made!

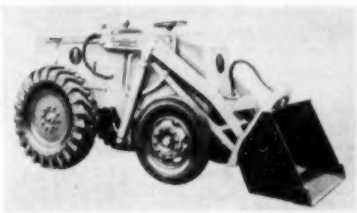
Want to know more about this unique valve? Write for Bulletin W-8A today.

GOLDEN ANDERSON
Valve Specialty Company
1200 RIDGE AVE., PITTSBURGH 33, PA.
Designers and Manufacturers of
VALVES FOR AUTOMATION

Purchasing

verse up to twenty-eight miles per hour.

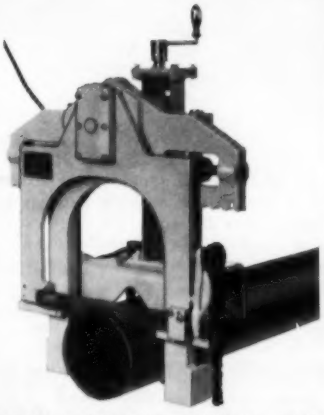
The new self-cooled, 3-element type torque converter automatically multiplies torque output of the engine in direct proportion to the load requirements. It reduces the amount of gear-shifting and "clutching," and provides a cushion or shock absorber for the entire power



New Hough Model HFC Payloader tractor-shovel is a rear-wheel drive unit.

train. Thus, the Payloader features smoother starts and reduced load shocks.

Full information on the new Model HFC tractor-shovel is available from THE FRANK G. HOUGH CO., 710 SUNNYSIDE AVE., LIBERTYVILLE, ILL. Write directly, or you may use the Post Card on the colored page in this section. Circle No. 871.



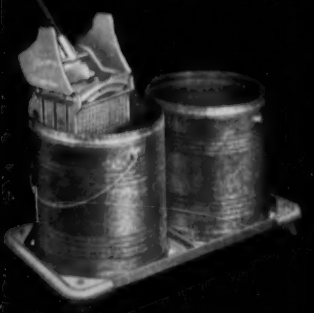
NEW PORTABLE POWER SAW SPEEDS CUTS IN TIGHT PLACES
On 2", 4", 6" & 8"
Cast Iron and Steel Pipe

WACHS GUILLOTINE SAW FACTS—

- Cuts 6" cast iron pipe in 4 minutes
- Cuts 6" steel pipe in 8 minutes
- Weight 120 pounds ● Width 22¼"
- Height 28" ● Depth 12"
- Set up time, less than one minute
- Power — electric or air motor
- *For further information write to:*

THE E. H. WACHS COMPANY
1525 N. Dayton Street • Chicago 22, Illinois

CLEANS FLOORS FASTER!



the engineered mop wringer

Geerpres

- EXTRACTS MORE WATER PER HANDLE OPERATION
- SQUEEZES MOPS DRIER WITHOUT SLOP OR SPLASH
- WRINGS MOPS UNIFORMLY
- PROLONGS MOP LIFE
- MINIMUM STORAGE SPACE
- EXTREMELY LONG LIFE
- QUIET AND EASY TO MOVE ON BALL BEARING RUBBER CASTERS

Exclusive Interlock Gearing multiplies pressure, squeezes mop DOWN, not out!

Fully guaranteed. Two styles and three size ranges to meet all mop wringing needs. Ask for literature.

GEERPRES WRINGER, Inc.
P.O. BOX 658 MUSKEGON, MICHIGAN

HERE'S WHY SCHIELD BANTAM SELLS MORE 3/8 YD. MACHINES THAN ALL OTHERS COMBINED

✔LOW PRICE ✔CRAWLER OR TRUCK MOUNTED
✔WIDE WORK RANGE ✔ADVANCED ENGINEERING
✔LOW OPERATING COSTS ✔HIGH SPEED MOBILITY

TAKE BANTAM MOBILITY HERE'S WHAT IT MEANS TO YOU

Bantam Crawler has low gross weight — requires no special highway hauling permits. Can be hauled over back roads — eliminates costly detours.

Carrier mounted Bantam moves from job-to-job at speeds up to 40 M.P.H. — 10 wheels — six wheel drive — Front end drive disengages for high speed travel.

LOOK WHAT A BANTAM CAN DO • Handles up to 100 Cubic Yards per hour as Shovel or Dragline • Back Hoe digs 100 ft. of 5 ft. Trench per hour • Lifts up to 12,000 lbs. • Handles ½ yd. Concrete Bucket, 2400-lb. Pile Driver

Contact your BANTAM Distributor, or fill in the coupon below and have Schield BANTAM send you a market kit telling you in detail how a BANTAM can fit your specific needs.. WRITE TODAY FOR YOUR FREE KIT.

SCHIELD Bantam Co.

234 Park St., Waverly, Iowa, U.S.A.

WORLD'S LARGEST PRODUCERS OF TRUCK-CRANES AND EXCAVATORS

Please send me my FREE KIT with special information on what the BANTAM will do for me.

NAME TITLE

COMPANY

ADDRESS

CITY STATE

TYPE OF OPERATION PARTICULARLY INTERESTED IN:

C-6

Purchasing

Montreal Uncovers Oldest Cast Iron Water Mains

Frank V. Dowd, superintending engineer of Montreal's water system, points out the unusual design features of the continent's oldest known water mains.

The oldest known water mains still in service on the North American continent were uncovered in Montreal, Canada, recently, according to the CAST IRON PIPE RESEARCH ASSOCIATION, 122 S. MICHIGAN AVE., CHICAGO 3, ILL. The mains—several thousand feet of cast-iron pipe—were laid 138 years ago and are in excellent operating condition.

Because of the unusual design of the pipe, excavation workmen called in Frank V. Dowd, superintending engineer of the Montreal water system, whose records proved that the pipe had been installed in 1816. It was used to replace original wooden mains laid in 1800.

Until Montreal uncovered its 1816 pipe, the Cast Iron Pipe Research Association believed that the oldest cast iron pipe still in service was installed in Philadelphia in 1819.

Electronic Office Work to Grow

Electronic mechanization of clerical work in offices will be the greatest growth area of electronics in the coming ten years, according to William J. Morlock, general manager of the Commercial Equipment Dept., GENERAL ELECTRIC CO., SYRACUSE, N. Y.

Sales of electronic equipment, exclusive of military equipment, is expected to increase to a 5-billion dollar yearly market in the next ten years. The greatest growth will be the application to accounting, inventory control, payrolls and purchasing.

Data processing equipment, reports Mr. Morlock, can now be built with a memory capable of handling all of the

files necessary to a 50-million dollar a year business. The information ordinarily contained in payroll files, production control files, inventory control files and accounting files can be handled simultaneously. Access to its stored information can be obtained within one-tenth of a second. The device can present the data visually on a cathode ray tube, like television, or printed on a piece of paper at the rate of 8,000 words a minute.

New Extinguisher Cart Speeds Fire Fighting

Using the new American-LaFrance fire extinguisher cart, one man can carry three extinguishers to the scene of the fire quickly and easily. There is no lifting from wall hangers. You simply grasp the cart handle and go.

This fast, mobile unit may also be used for stationing various combinations

At the sound of the fire alarm, you simply grasp the cart handle and go.

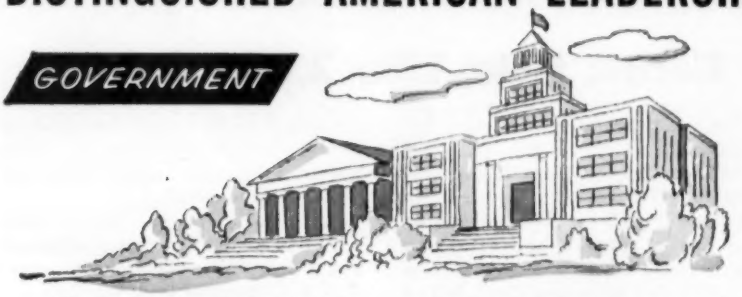
of Dry Chemical, Carbon Dioxide and Vaporizing Liquid type extinguishers at their strategic locations. It is handy for holding extra extinguishers for standby protection during welding or other operations that create fire risks.

The new cart is 46 inches high, weighs 26.2 pounds, and requires 14 x 21½ inches of floor space. The height of the extinguisher hanger is adjustable, enabling the unit to hold three extinguishers in a variety of types and sizes.

Detailed information on this versatile extinguisher cart is available from the AMERICAN - LAFRANCE - FOAMITE CORP., ELMIRA, N. Y. Write directly, or you may use the Post Card located for your convenience on the colored page in this section. Circle No. 857.

DISTINGUISHED AMERICAN LEADERSHIP

GOVERNMENT



Department of Agriculture The Meat Inspection Branch of the U. S. Department of Agriculture maintains an active Filmsort file of over 250,000 meat labels used throughout the United States. Microfilmed copies of labels are mounted in Filmsort Aperture cards, coded and punched for electric accounting machine sorting. For reference, the Department of Agriculture uses portable desk-top Filmsort Inspector viewers.

INDUSTRY

Jones and Lamson . . . Jones & Lamson Machine Company, large Eastern manufacturers of machine tools, are using over 120,000 Filmsort Aperture cards for engineering drawings. Microfilmed drawings are mounted in 3½ x 5″ file cards with pertinent information recorded on the face of the card. The Filmsort Surveyor with its 24 x 36″ screen and automatic variable magnification is ideal for reference to engineering drawings.

BUSINESS

Inter County Title Company One of the largest title companies in the United States, Inter County Title Guaranty and Mortgage Company, is now using close to 500,000 Filmsort Jacket cards for housing microfilmed bases, the documents necessary to the issuance of a title insurance policy. Inter County offices use the desk model Filmsort Inspector reader, designed for use in ordinary office light, for reference to their microfilm files.

USE FILMSORT FOR YOUR VITAL RECORDS

Progressive management everywhere is turning to Filmsort as a system of records handling. The combination of microfilm with established card filing methods offers adaptability, economy and increased efficiency. Filmsort tailors a system to fit the individual need. Let us tell you how the Filmsort system of unitized microfilm can work for *you*.

For free booklet "New Horizons with Microfilm" write:
FILMSORT DIVISION, Dexter Folder Company
Department D, Pearl River, New York

*Name*_____
*Firm Name*_____
*Address*_____
*City*_____ *State*_____

PEARL RIVER **Filmsort**® NEW YORK
DIVISION OF DEXTER FOLDER COMPANY

Electric Hoist Lifts 2,000 Pounds

One man operating the new hydraulic "Utility" hoist can lift 2,000 pounds simply by pressing a button. The electrically powered unit is reported to lift loads in half the time required by a manually powered hoist or crane. Moreover, it is quickly converted from a mobile shop hoist to a truck bed or loading dock mounting. You just lift the hoist from its 4-wheel floor truck to a well or socket mounted in any other position, connect the cables, and the unit is ready for more work.

A hydraulic system, rated at 5,000 psi, provides power to lift a 1,000-pound load 8 feet with a built-in boom extension; a 1,500-pound load, 6½ feet; and a 2,000-pound load, over 4 feet. The new six-volt motor is battery powered.

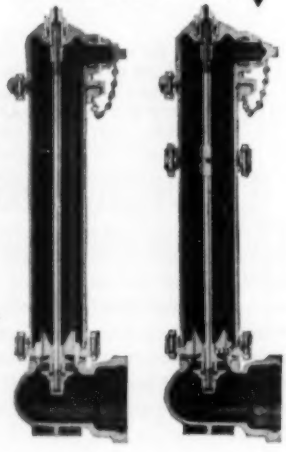
It takes only ½-minute to lift 2,000 pounds with the new Unit "Utility" hoist.

The Hydraulic "Utility" hoist is made by the UNIT MFG. CO., 1227 HARMON PL., MINNEAPOLIS, MINN. For additional data, write the company directly, or you may use the Post Card on the colored page in this section. Circle No. 852.

Friction's needed for a match but it's no help in a fire hydrant

Friction causes loss of water pressure and reduces the effectiveness of fire-fighting equipment. That's why R. D. Wood Hydrants are designed to cut friction way down—and why so many communities rely on them for fire protection.

The R. D. Wood Hydrant can be furnished with breakable flange and stem coupling at extra cost. Both are built to break with a heavy blow. This saves the hydrant itself and makes repair quick and easy.



THE R. D. WOOD SWIVEL JOINT HYDRANT: All internal parts, including drain valve seat, removable through barrel • all-bronze stuffing box • completely revolving head • compression-type valve, cone shaped to prevent water hammer • automatic drain valve • bronze main valve seat screws directly into elbow with straight, not tapered threads • mechanical-joint pipe connections if specified

R. D. Wood Swivel Joint Hydrants

Public Ledger Building, Philadelphia, Pa. | Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

Bloomington Installs New Concrete Water Line

Concrete pipe is being installed for a new 14-mile water supply line in Bloomington, Ill., according to a recent announcement. A contract for 70,630 feet of 24-inch concrete steel-cylinder, prestressed pressure pipe has been awarded to PRICE BROTHERS CO., 1829 E. MONUMENT AVE., DAYTON 1, OHIO. The pipeline is being installed by the Emil Marcelleti & Son Construction Co.

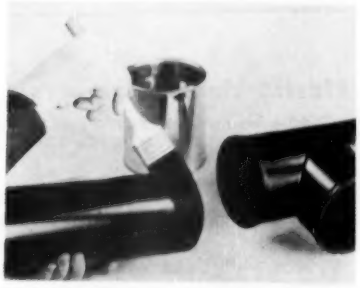
Water for the new supply line will be drawn from Lake Bloomington, some 14 miles from the city, by electric pumps with standby diesel engine. These pumps will be installed at the present intake and pumping station at the lake. According to Elmer Cross, city manager of Bloomington, the entire water supply project is scheduled for completion in late spring of this year.

Plastic Pipe Easily Connected

It's no trick to assemble the plastic pipe made by the Continental Can Co.

The company's Mills Plastic III (Butyrate) pipe can be solvent welded simply by brushing a stripe of solvent onto the end of the pipe, brushing thinner onto the inside of the fitting, and inserting the pipe end with a twist motion to expel air bubbles until it reaches the stop inside the fitting.

This type of pipe weighs 90% less than metal pipe, can be sectioned to any length with an ordinary handsaw, and is sturdy yet flexible enough to allow for bending to fit ditch contours. The pipe can be furnished either black or clear, and is particularly useful for handling salt or corrosive liquids in plant piping or waste discharge lines.



An application of solvent on the pipe end and an application of thinner on the inside of the fitting, permits the workman to "weld" the pipe sections together quickly and efficiently.

Full details on the use of Mills Plastic III pipe may be obtained from the CONTINENTAL CAN CO., CONTINENTAL CAN BLDG., 100 E. 42nd ST., NEW YORK 17, N. Y., or take advantage of the Post Card on the colored page in this section. Circle No. 879.

New "Two Can" Sanitation Cart

New two-can cart, Model 2CF, is about the same width as a one-can cart.

A fast, easy way to remove debris from streets, parks, playgrounds and picnic grounds, is to use the new Two Can Sani-Cart, introduced by the AMERICAN CONVEYOR CO., 1115 W. ADAMS ST., CHICAGO 7, ILL. This sturdy, rubber tired cart holds two cans, each with a capacity of 20¾ gallons, which are secured to the cart by spring loaded "J" hooks. These cans are easily removed from the front and rear of the cart. The "J" hooks are located on a convenient center post.

A swivel, ball bearing, rubber tire front caster wheel provides a short turning radius for cramped quarters. In addition, the cart is equipped with a conveniently located broom holder. The paint-coated, galvanized cans feature dropside handles.

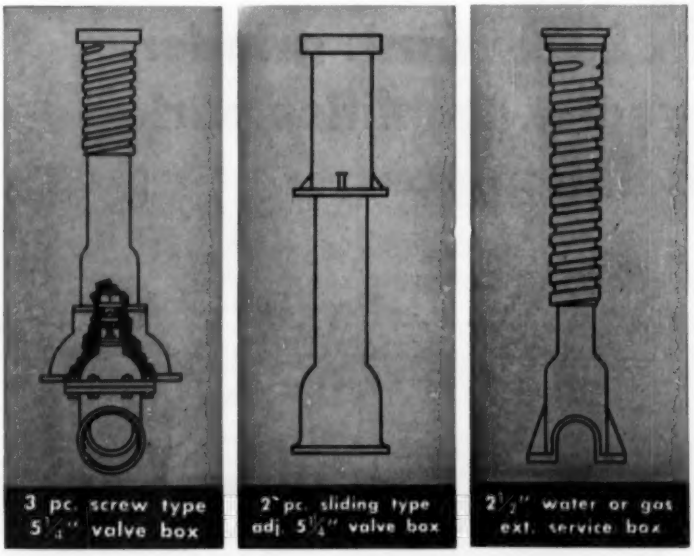
The new Sani-Cart is available in three models, each designed for fast, efficient sanitation work. For full details, write the company directly, or you may use the Post Card on the colored page in this section. Circle No. 855.

BUFFALO PIPE & FOUNDRY

BUFFALO MUNICIPAL CASTINGS

are available in every size and style!

No matter what size, shape or style municipal casting you may desire — you're practically sure to find a "Buffalo" casting to serve your needs. Or, where desired, castings may be made to your own specifications. Whether you need valve, service or roadway boxes, meter boxes, manhole rings and covers or other municipal castings, you'll find all "Buffalo" castings designed for service and dependability.



Prompt quotations given on all your standard or special gray iron or non-ferrous castings.

Write or wire for Bulletin M11.

SINCE 1930
BUFFALO PIPE & FOUNDRY CORP.

BOX 55 – STATION B DE 6764 BUFFALO 7, N. Y.

The first section of the new "PTR" (part time restriction) sign (left), shows the sign message during normal traffic flow. At 4 P.M., the shade goes up (inset), to reveal the part time restriction message (right). After the peak period passes, the normal traffic sign reappears.

Portland Tests New Traffic Signs

In an effort to improve the city's peak hour traffic program, Portland, Ore., is now testing a new type of Perma-Lite "blank-out" sign introduced as the "PTR" (part time restriction) sign. The sign shows two alternating messages at predetermined times through a time-clock control. One message is visible during normal traffic flow, the other shows during peak hours.

In the Portland installation, the normal traffic sign is "NO LEFT TURN 4 PM-6 PM." At 4 P.M. (peak hour) a new "NO LEFT TURN" message appears, to be replaced at 6 P.M. when the alternated ". . . 4 PM-6 PM" message reappears.

In addition to its use as a peak hour restriction sign, the "PTR" may be used effectively as an automatically controlled advanced warning sign at railroad crossings and drawbridges. The unit is constructed in a variety of sizes, the smallest of which is 12 inches high, 24 inches long, and 10½ inches deep.

Detailed information on this economical replacement for ineffective restriction signs, is available from the ELWOOD WILES CO., PORTLAND, ORE. Write directly, or you may use the Post Card on the colored page in this section. Circle No. 867.

Plastic House Numbers

Plastic house numbers are resistant to rust. They can be plain or reflectorized, black or colored. They can be fastened to the house or placed on the lawn. Another type of lawn sign identifies families, such as "Williams" or "Monroe." All these numbers and letters are offered by REFLECTO LETTERS, 411 E. 101st ST., NEW YORK 29, N. Y. Write, or use the Post Card in this section. Circle No. 883.

M & M brush grinder greatly simplifies park maintenance

Park Superintendents can now keep parks trim and lovely while saving up to 85% in brush handling costs with an M & M Brush Grinder. This portable unit with its own power plant hitches to jeep, tractor, or truck—goes right to the job. Saves hours of working time plus labor and haulaway costs because one man, feeding brush or branches up to 6" diameter into the Brush Grinder, can convert 7 truckloads of brush into one truckload of small wood chips in a comparatively short time. Chips can be piled on ground or automatically blown into truck, ready for hauling. All moving parts fully enclosed for safe operation. Write today for illustrated folder giving complete information.

MITTS & MERRILL 1025 South Water Street • SAGINAW, MICHIGAN

Engineer/Borough Manager Wanted

by the Borough of Middletown, Pa., to supervise Sewerage Department and Highway Department. Water negotiations now under way for acquisition of privately owned water system by the Borough.

Some experience in the engineering field is necessary. Attractive salary to the right man.

For further information, contact

Chas. B. Force,
Borough Secretary
Middletown, Pa.

or

Joseph Nissley,
Borough Solicitor
Livergood & Nissley
212 N. Third Street
Harrisburg, Pa.

there should be **EDDY HYDRANTS** in your future installation plans because:

- They are mechanically *right* and simple in design—built to highest standards of craftsmanship—for decades of dependable operation with minimum maintenance.
- Easily serviced by one man, without special tools or heavy rigs.
- Large waterways—open smoothly *with* the pressure and close without water hammer.
- Drip action positively drains standpipe, safeguarding against freeze-ups.
- Available with all types of connections.
- 106 years' successful operation assures availability of repair parts.
- Meet all A.W.W.A. specifications.

Send today for full information on the complete line of Eddy Valves and Hydrants. No obligation.

EDDY VALVE COMPANY
A Subsidiary of James B. Clow & Sons
WATERFORD, NEW YORK

Purchasing

Dorr-Oliver Personnel Changes

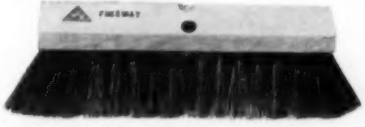
The Dorr Co. of Stamford, Conn., and Oliver United Filters of Oakland, Calif., began the new year by forming Dorr-Oliver Inc., according to a recent announcement. The new merger resulted in a number of personnel changes in the areas of sales promotion and public relations.

C. W. Crumb, sales promotion manager for Oliver United Filters, takes over the same responsibilities for the joint corporation. He is being assisted by C. M. Comstock, assistant advertising manager of Dorr, who joins Dorr-Oliver as assistant sales promotion manager. Sutherland-Abbott of Boston, Mass., Dorr's advertising agency, will place all space advertising for the new company.

A. L. Morris, formerly advertising manager for Dorr, is now director of public relations for Dorr-Oliver, handling not only the usual public relations functions, but product and technical publicity as well. R. D. Forger, new technical assistant in Dorr's advertising department, will continue his work in technical publicity.

Headquarters of the new corporation are located in Stamford, Conn.

Long-Wearing Street Broom

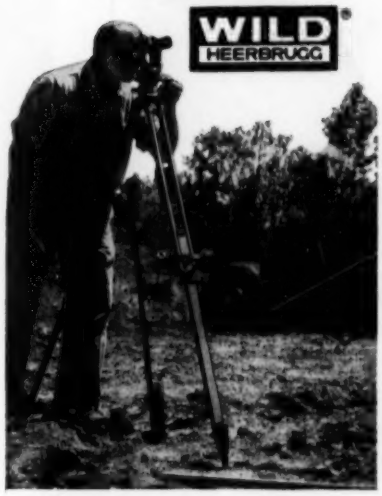


The efficient, oval-shaped Duratex broom fibres provide a flat sweeping action.

Reported to wear about three times longer than ordinary street brooms, the new Freeway broom sweeps streets, driveways, or parking areas with brick, concrete, gravel, or dirt surfaces. The lightweight unit features Duratex plastic fibres which pick up dust by a magnetic action. These fibres form a wide flare for thorough sweeping. They are easily cleaned with plain water.

Freeway brooms are made on specially treated beech blocks, and are available from the AMERICAN PUSH BROOM AND BRUSH CO., 617 SANSOME ST., SAN FRANCISCO 11, CALIF. For complete information, write the company directly, or you may use the Post Card on the colored page in this section. Circle No. 878.

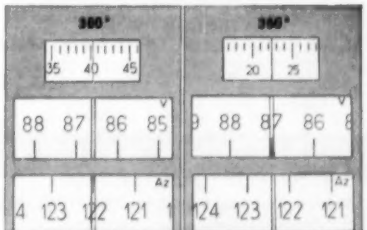
THE ACME OF ACCURACY IN ACTION



WILD T-1 OPTICAL *REPEATING* TRANSIT

Rugged, compact design... with 20 years of proven service under tough field conditions.

Both circles read from one single position through microscope alongside telescope eyepiece. Optical micrometer eliminates possibility of reading error. Illumination is provided by daylight mirror or battery attachment for night, underground or mine work.



WILD surveying instruments, inherently accurate, are Swiss precision designed for stability under adverse conditions, for sturdiness, and for ease in operation... they provide lasting trouble-free service.

●

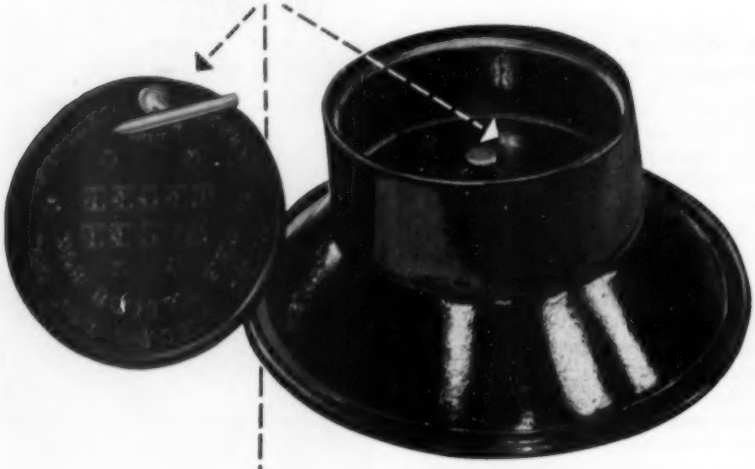
For details phone or write for Bklt AM1

●

Full Factory Service by Specialists

WILD HEERBRUGG INSTRUMENTS INC.
MAIN & COVERT STS., PORT WASHINGTON, N. Y.
PORt Washington 7-4843

WABASH DOUBLE-LID COVERS



for MAXIMUM PROTECTION from frost

WRITE FOR CATALOG

The new No. 50 Ford Catalog contains full information. FREE. Send today.

The Wabash Cover was designed to provide the utmost in frost protection for pit water meters. Two lids, with a 4" dead air space between, add extra insulation. Notice also, the extra depth and the sloping skirt that help hold heat loss to a minimum.

Top lid is inset and locked with the patented Ford Lifter Worm Lock. There is no finer meter setting protection.

FOR BETTER WATER SERVICES FORD

Manufactured by THE FORD METER BOX COMPANY, INC.
Wabash, Indiana

No. 3X

Frame length 37¼"
Frame width 15"
Capacity ¾" to 2" Pipe

A ONE MAN MACHINE

Push Pipe Summer & Winter Push Pipe

WRITE FOR NEW CATALOG SHOWING COMPLETE LINE OF PIPE PUSHERS AND PRICES.

50TH
1905—ANNIVERSARY—1955

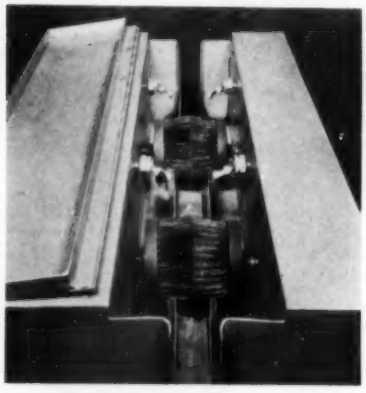
GIANT MANUFACTURING CO., COUNCIL BLUFFS, IOWA

Purchasing

New Fire Hose Washer

A fire hose washer is now offered by the Circul-Air Corp., originators of the electric hose dryers said to be used in 70% of the new fire stations in the United States and Canada.

The hose is passed through a flow of clean water from roto-jet spray nozzles while being scrubbed by four nylon



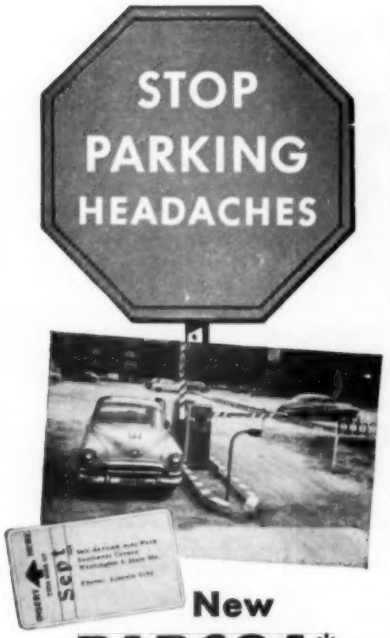
brushes revolving at high speed. Brushes of this type are waterproof and firm in texture, yet have no abrasive effect on hose jackets as might be expected of fibre bristles. While designed to wash primarily with clean water only, if some sections have been spotted with oil, they

can be sprayed with a mild solution of washing compounds.

Descriptive literature on washers, tables and dryers may be obtained from THE CIRCUL-AIR CORP., 575 E. MILWAUKEE, DETROIT 2, MICH., or use the Post Card in this section. Circle No. 858.

Tires and Tubes

The Armstrong Rubber Company sells its tires and tubes to a large number of state, county, city and town governments. We operate four manufacturing plants in West Haven and Norwalk, Conn.; Des Moines, Ia.; and Natchez, Miss., with a total production capacity of more than 27,000 tires per day. We have the largest tire test fleet in the industry at San Antonio, Texas, and a



New

PARCOA*

Card-Key Control Operates Parking Lots

AUTOMATICALLY...

WITHOUT ATTENDANTS

Now you can solve parking problems in your community . . . relieve congestion and provide revenue—and do it automatically, without attendants.

The amazing new PARCOA system does the job safely, economically and dependably. The simple electrical mechanism controls entrance and exit gates, actuated by card-keys issued only to legal parking customers.

Low in first cost. Easy to install. Minimum maintenance. No attendants needed. Controlled capacity with 100% collection assured. Coded card-key can be changed as desired. System pays for itself quickly.

Write for illustrated brochure and name of nearest distributor.

*Your choice of controls (coin, card, token or any combination) makes this system readily adaptable to individual requirements.

PARCOA

PARKING CORPORATION OF AMERICA

Division of Johnson Fare Box Company
Specialists in revenue collection since 1909
33 No. La Salle Street, Chicago 2, Illinois
Sales and Service Offices in Principal Cities

Purchasing

staff of 160 men engaged in research and development work on tires and tubes.

The savings that The Armstrong Rubber Company is able to extend to governmental agencies is based on modernly equipped plants and low distribution costs attained through the sale of its products through local independent tire distributors who operate on a direct factory basis.

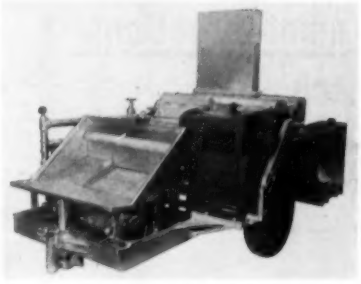
We realize that the purchase of tires and tubes is one of the substantial expenditures of any governmental agency, and we would be very glad to furnish technical information concerning tires and tubes in general.

P. L. GIBLIN
Vice-President
The Armstrong Rubber Co.
West Haven, Conn.

Moves to Larger Quarters

General offices of The Williams Gauge Co., Inc., have been moved to new and larger quarters at Two Gateway Center, Pittsburgh 22, Pa., according to a recent announcement. The company was formerly located at 1620-22-24 Pennsylvania Ave., Pittsburgh.

Choice of Hot or Cold Asphalt Mix



Adept at producing either a hot or cold mix, the new HTD-JR asphalt mixer features a metal conveyor, 24 inches wide, for proportioning the aggregate, and a 55-gallon per minute positive displacement pump for proportioning the bituminous material.

As a continuous mixer, the HTD-JR will handle 120 tons of cold mix per hour, or 20 tons of hot mix. The unit is made by K. E. MCCONNAUGHAY, LAFAYETTE, IND. For full details, write the company directly, or you may use the Post Card on the colored page in this section. Circle No. 866.

Put it up with a wrench ...in hours

Low, low priced—but Panl-Frame has wanted Butler features like 100% die-formed cover panels that eliminate field tinkering.

It's BUTLER's new Panl-Frame utility building

It is just a bolting job—a fast and easy wrench-and-screw driver job to erect Butler's new Panl-Frame utility building. Once bolted together it is stormtight—and stays that way. Panelized construction makes erection even faster and simpler if you want to erect several buildings. Wall panels can be preassembled in large sections, and tilted up on your foundation. Uses are unlimited—field houses, supply depots, pump houses, bulk plants, garages. Widths from 6 to 24 feet, sidewalls 8 or 10-feet high. Get any length you desire by adding sections. Cost is attractively low. Write today for free booklet.

BUTLER

Manufacturers of Oil Equipment
Steel Buildings • Farm Equipment
Dry Cleaners Equipment • Special Products

Factories at:
Kansas City, Mo. • Galesburg, Ill. • Minneapolis, Minn.
Richmond, Calif. • Birmingham, Ala. • Houston, Texas

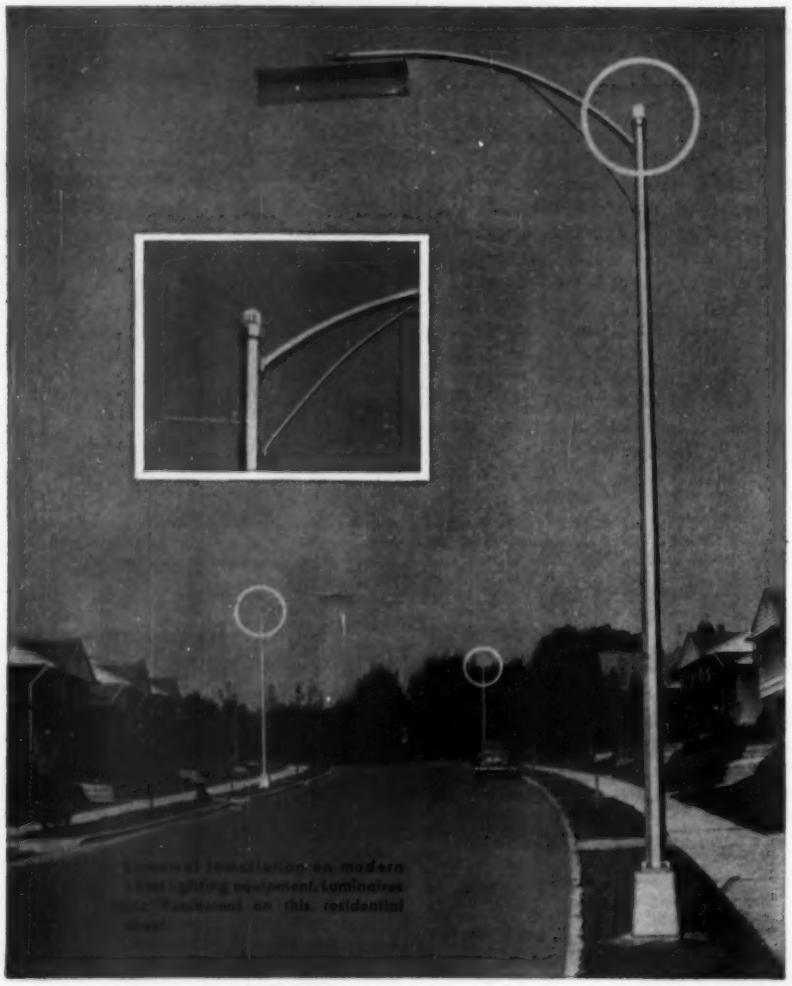
For prompt reply address office nearest you.
BUTLER MANUFACTURING COMPANY
7350 E. 13th Street, Kansas City 26, Mo.
950A Sixth Ave., S.E., Minneapolis 14, Minn.
1015 Avenue W, Ensley, Birmingham 8, Ala.
Dept. 50A, Richmond, Calif.

Please mail more information on Butler Panl-Frame buildings.

Name_____

Address_____

City_____ State_____



LUMATROL® omni-directional
photoelectric light switch.....

- ... the new, simple method of *fully* automatic light control
- ... the low-cost, plug-in unit that's easy to install, easy to maintain
- ... the light switch that stays on the job year after year regardless of weather
- ... the small-size switch that's easily adaptable to any pole or luminaire, *PRODUCING WELCOME ECONOMIES WHEREVER INSTALLED*
- ... LUMATROL RATES FIRST ON ALL TWELVE SPECIFICATIONS NORMALLY APPLIED TO THIS TYPE CONTROL...

WRITE TODAY FOR TECHNICAL BULLETIN.

micro balancing
INCORPORATED
GARDEN CITY PARK, L. I., NEW YORK
Trade Mark Reg. U.S. Pat. Off.

Purchasing

Water Specialists Meet In Memphis

A two-day meeting to discuss the latest developments in water for agriculture, municipalities and industry was held recently by LAYNE & BOWLER, INC., MEMPHIS 8, TENN., world's largest developer of ground water resources. More than 300 visitors attended the conferences, including hydraulic engineers and officials of Layne & Bowler and 16 associate companies. Included on the agenda were discussions of water, earth formations, movement of industry, and water well maintenance in areas throughout North America.

A banquet at the Hotel Peabody, Memphis, culminated the two-day meeting. Guests were welcomed by J. I. Seay, president of the board of Layne & Bowler. A. O. Putnam, advertising and public relations director, presided over the conferences.

Worthington Opens Educational Exhibit

Featured among the displays is an exhibit showing how air conditioning works, plus a 3-dimensional composite of community life representing factories, marine operations, railroads, road-building crews, office buildings, homes, power plants, and water and sewage works.

The first observer-participant educational exhibit to be sponsored by an industrial machinery manufacturer was opened at 99 Park Avenue, New York City, recently, by the WORTHINGTON CORP. of HARRISON, N. J.

This permanent exhibit illustrates the basic operating principles of machinery related to business, industrial, community and home life. By operating the displays himself, the visitor is able to gain an understanding of various machines and can see how they are used in making industrial operations more efficient and home life more comfortable.

What's Your Problem?

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

To THE AMERICAN CITY's Catalog Supply Department:

Please send me further information on products described in "Purchasing News" section beginning on page 191, as circled below:

852	857	862	867	872	877	882
853	858	863	868	873	878	883
854	859	864	869	874	879	884
855	860	865	870	875	880	885
856	861	866	871	876	881	886

I would also like to receive manufacturers' booklets on.....

.....

.....

.....

.....

Name: .....

Title: .....

Address: .....

..... 1-55

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD

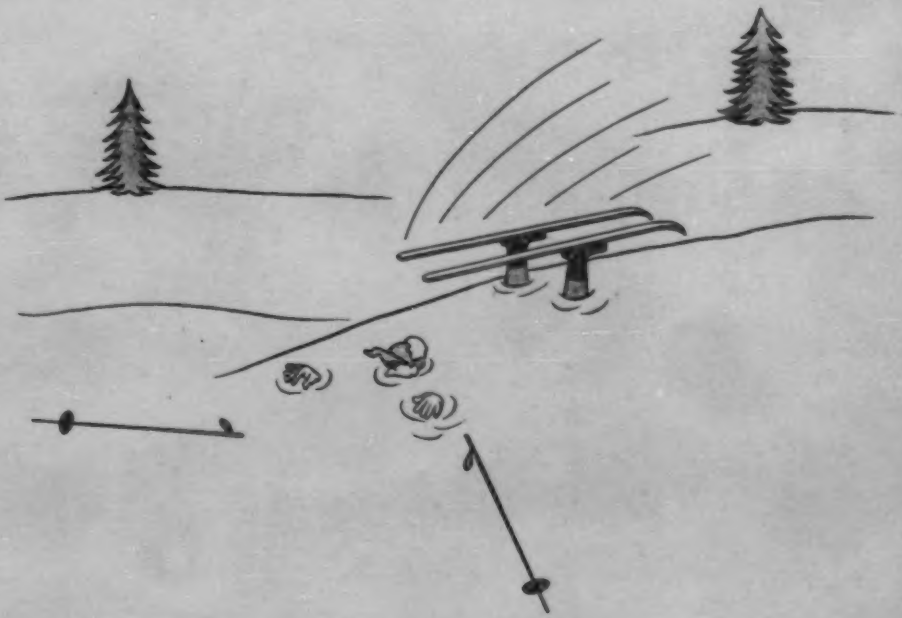
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE

470 FOURTH AVENUE

NEW YORK 16, N. Y.

Snowed Under?



You can obtain manufacturers' literature by making use of these convenient Business Reply Cards! A quick easy way to get full details on products and services mentioned or advertised in this issue.

To THE AMERICAN CITY's Catalog Supply Department:

Please send literature on items numbered as follows, starting on Page 29:

499	505	511	517	523	529	535	541	547	553	559	565
500	506	512	518	524	530	536	542	548	554	560	566
501	507	513	519	525	531	537	543	549	555	561	567
502	508	514	520	526	532	538	544	550	556	562	568
503	509	515	521	527	533	539	545	551	557	563	569
504	510	516	522	528	534	540	546	552	558	564	570

I would also like to receive manufacturers' booklets on.....

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Name: .....

Title: .....

Address: .....

..... 1-55

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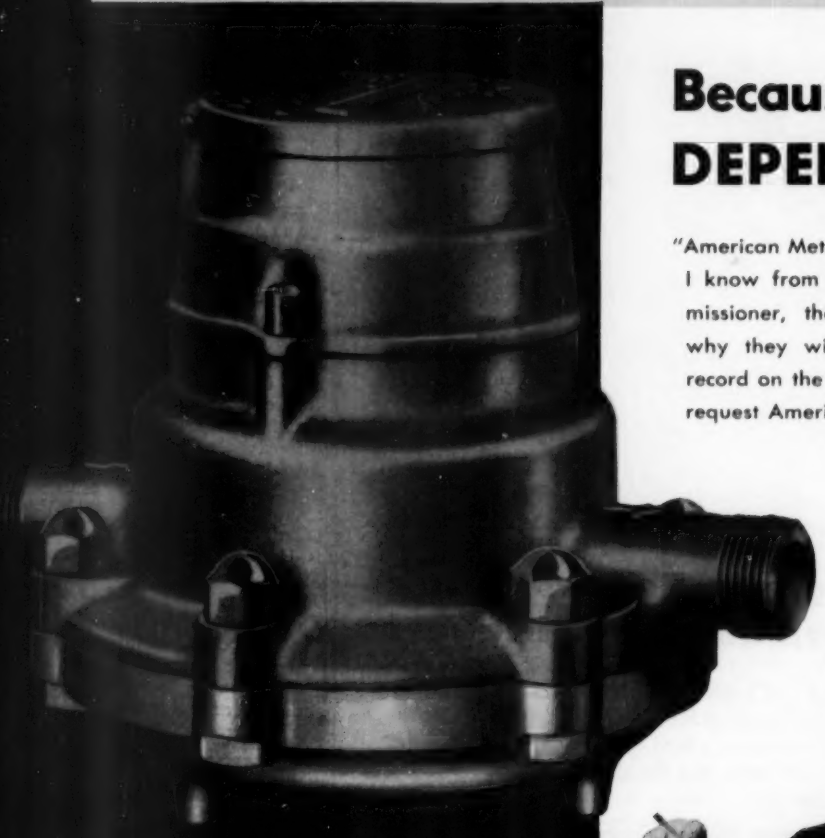
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE

470 FOURTH AVENUE

NEW YORK 16, N. Y.

The Safest Meter to Buy is AMERICAN



Because It's DEPENDABLE

"American Meters have proven themselves. I know from experience as Water Commissioner, that they stand up! That's why they will help me make a good record on the job. I'll always be safe if I request American."

In a million homes, American Meters are doing their job day after day, year after year, silently, dependably. It's the kind of trouble-free service you expect from American Meters and it's the kind of service you get. No wonder then that water department heads who wish to make a good record, take no chances but choose the safest meter they can buy, American.

BUFFALO METER CO.

2902 MAIN STREET • BUFFALO 14, N. Y.

Make Emergency Repairs Faster with a Sherman Power Digger!

The job: Break up 3" of asphalt and 8" of concrete with air tools, then dig bellholes 5 feet deep for repairs to underground conduit. The location: A busy street, where traffic congestion must be kept to a minimum, repairs made, and the street re-paved for traffic to resume as soon as possible.

The solution: A Sherman Power Digger. Its actuated shovel action made it possible to dig an under-cut bellhole to the required depth with a small surface opening, thus keeping later street re-surfacing cost to a minimum. The tractor-mounted digger traveled to the site under its own power, dug at a fraction of the cost of hand labor, and saved considerable time by loading spoil directly into trucks from the excavation.

If you now excavate by hand or with machines too clumsy for jobs like this, investigate the Sherman Power Digger. It's compact, flexible, fast, easy to operate. It costs little to buy, less to maintain, quickly pays for itself. Write today for Bulletin No. D-58

Designed, Engineered and Manufactured Jointly by
SHERMAN PRODUCTS, Inc.
Royal Oak, Michigan
WAIN-ROY CORPORATION
Hubbardston, Mass.

Patent No. 2,303,852
Other patents pending
© SHERMAN PRODUCTS INC., 1954

Sherman
PRODUCTS, INC.
ROYAL OAK, MICHIGAN

About People

After serving 39 years with **The Chapman Valve Mfg. Co.,** Indian Orchard, Mass., Ernest Cochran has been elected president and general manager by the firm's board of directors. Mr. Cochran, formerly executive vice-president for Chapman, succeeds the late John J. Duggan. A recent addition to the company's board of directors is Harold G. Dickey, president of the Moore Drop Forging Co. of Springfield, Mass.

Ernest Cochran

Municipal swimming pool operators and water supply officials who want information on water chemistry, bacteriology or sanitation, can bring their problems to Arthur S. Blank, new chief chemist of the water analysis and bacteriology department of the **Modern Swimming Pool Co., Inc.,** White Plains, N. Y. Mr. Blank, formerly chief chemist for the Connecticut State Department of Health, will work with the staff of the company's Free Advisory Service.

Buel Wallis has been appointed general sales manager of the **J. D. Adams Mfg. Co.,** Indianapolis, Ind. Mr. Wallis joined the Adams organization in 1929, and has served in branch offices in Dallas, St. Louis, Memphis, Atlanta and Des Moines.

Buel Wallis

Warren L. Bremer, vice-president of the Layne & Bowler Pump Co., Los Angeles, Calif., has been elected president of the **Vertical Turbine Pump Association,** according to a recent announcement. Other officers elected at the Association's fall conference meeting were a new vice-president, William H. Reeves, vice-president of Layne & Bowler, Inc., Memphis, Tenn.; and a

new secretary-treasurer, B. A. Tucker, sales manager of the Peerless Pump Division, Food Machinery and Chemical Corp., Los Angeles, Calif. The Association's executive committee includes Mr. Bremer; Mr. Reeves; T. E. Woodruff of Fairbanks Morse & Co.; G. F. Twist of the Peerless Pump Division; and L. C. Kimball of the Byron Jackson Co. Main offices of the Vertical Turbine Pump Association are in Los Angeles, Calif.

Charles W. Krause, a familiar name in the water-works industry, has been appointed director of the Water and Sewerage Industry and Utilities Division of the Business and Defense Services Administration, U. S. Department of Commerce, according to BDSA Administrator Charles F. Honeywell. Mr. Krause, New York district manager for the **Neptune Meter Co.**, is on loan to BDSA from his company under a special rotation system. The system permits outstanding business executives to serve the government without compensation for periods of six months or longer.

Charles W. Krause is sworn in by Charles F. Honeywell, BDSA Administrator.

Scheduled to coordinate sales of Pak-Mor refuse collection units outside continental North America, is David R. Neighbor, the company's new export sales representative. Main offices of the **Pak-Mor Mfg. Co.** are located in San Antonio, Texas.

New director of Equipment Sales for the **Westinghouse Air Brake Co.**, is Charles J. Haring, who joins the company's executive staff at Gateway Center, Pittsburgh, Pa. Westinghouse has also appointed a new vice-president and general manager, Paul I. Birchard, for the Le Roi Division in Milwaukee, Wis.

Paul I. Birchard

When Harvey R. Ray takes over as sales manager for **The Weinman Pump Mfg. Co.**, Columbus, Ohio, he will be in charge of all sales and product promotion activities including direction of the national and export sales oganization, reports Donald G. Lear, president. Mr. Ray succeeds the late E. D. Bader.

Faced with the task of choosing a general sales manager, the **Tennessee Corp.**, Atlanta, Ga., turned to its own sales department, and selected E. H. Shelton to fill the newly-created post. Mr. Shelton last served as manager of the company's Atlanta sales office. Additional appointments by the Tennessee Corp. include L. S. Kaniecki, new manager of chemical sales; H. G. Cunningham, assistant manager, chemical sales; and R. W. Alexander, assistant general manager of the firm's Lockland (Ohio) plant.

Directors and officers have been announced for the **Huber-Warco Co.**, a new firm formed by the merger of The Huber Mfg. Co., Marion, Ohio, and The W. A. Riddell Corp., Bucyrus, Ohio. Taking over as chairman of the board for Huber-Warco is Clark T. McConnell, formerly president of Riddell. Former Huber president, Don A. Howard, is president of the new company, and Jacque E. Jones, vice-president and general manager for Riddell is executive vice-president. Main offices of Huber-Warco will be located in Marion, Ohio.

W. S. Richardson, general manager of the **Florida Equipment Co.**, Jacksonville, Fla., will supervise the sale of Koehring heavy-duty construction equipment in the State of Florida, according to the **Koehring Co.**, Milwaukee, Wis. The Jacksonville firm will also handle the products of two Koehring subsidiaries, the Parsons Co. of Newton, Ia., and the Kwik-Mix Co. of Port Washington, Wis.

New general sales manager for the **Veon Chemical Corp.** is Jason D. Radding, formerly with the Ramset Division of the Olin Mathieson Chemical Corp. Veon Chemical is a division of the Broadway Maintenance Corp., Long Island City, New York.

Three members of the staff of **Chicago Bridge & Iron Co.**, Chicago, Ill., have been elected to the company's board of directors, according to recent reports. They are George S. Trees, assistant general sales manager; Fred Goldsby, vice-president and general sales manager; and H. J. Clarke, vice-president and manager of tank erection.

The recent annual meeting of the board of directors of **The Asphalt Institute,** New York City, resulted in the election of H. B. Pullar to head the Institute's Executive Committee. Mr. Pullar is president of the Berry Asphalt Co., Magnolia, Ark. J. E. Buchanan retains his position as president of the Institute for another year.

Members of the board of directors of the **Portland Cement Association,** Chicago, Ill., have elected a new chairman, Emory M. Ford, and a new president, G. Donald Kennedy. Mr. Ford is chairman of the Huron Portland Cement Co. New directors of the Association are H. B. Robeson, president of the Nazareth Cement Co., and James H. Ackerman, president of the Dragon Cement Co.

After a short absence from **Gar Wood Industries, Inc.**, Wayne, Mich., Leo M. Brown rejoins the company as assistant to the director of sales and advertising, according to E. B. Hill, vice-president of sales. Mr. Brown was formerly sales manager of Gar Wood's St. Paul Hydraulic Hoist Division.

L. M. Brown

Robert H. Morris, vice-president of the **Mueller Co.**, Decatur, Ill., announces the promotion of E. George Baker to the position of assistant sales manager of the firm's Los Angeles plant.

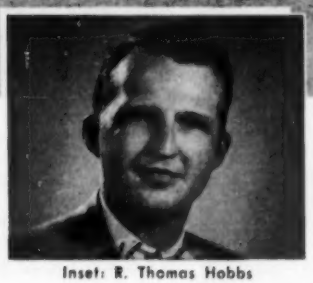
From Oscar D. Nelson, president of the **Butler Mfg. Co.**, Kansas City, Mo., comes news of the appointment of John A. Morgan to take over the recently-created position of executive vice-president. The company also has a new vice-president of engineering and production, Walter L. Smith.

The States of Washington, Oregon, Idaho and Montana, form the "stateside" part of the territory that Robert P. Brooks will travel to represent the **Bucyrus-Erie Co.**, South Milwaukee, Wis. Also included in his district are the Territory of Alaska, the provinces of British Columbia and Alberta, and the Yukon Territory. The new Northwestern sales manager will locate in Seattle, Wash.

R. P. Brooks

News from the Industrial Sales Department of the **Permutit Co.**, New York City, informs us of the appointment of two new sales engineers, K. G. Barnhill and E. J. Connelley. Mr. Barnhill will locate at Permutit's Boston (Mass.) office and Mr. Connelley at the company's Cincinnati (Ohio) office. Both men are experts on all phases of water conditioning.

At **Sherman Products, Inc.**, Robert W. Humes leaves his position as advertising and sales promotion manager to become assistant sales manager for all of the company's products. His headquarters, as before, will be at Sherman's main offices in Royal Oak, Mich.



Inset: R. Thomas Hobbs

LEFT TO RIGHT:
Public Works Supt. Cleveland, City Engineer Altman, and City Manager Hobbs inspect the new Standard Steel Asphalt Distributor.

HOW TO SELL CITIES LIKE HOPEWELL

Your sales to city and town governments are sometimes determined by whether or not you receive an invitation to bid. Here is how Hopewell Virginia (population 15,955) recently bought street maintenance equipment.

Hopewell's paving costs were out of line. Superintendent of Public Works W. P. Cleveland, City Engineer W. M. Altman, Jr., and City Manager R. Thomas Hobbs met to discuss the problem. An obsolete asphalt distributor proved to be responsible. A modern high-capacity machine was obviously the answer.

The City Council, after studying the City Manager's report, gave him permission to advertise for bids. He then went to the MUNICIPAL INDEX, the annual purchasing guide for city officials, to locate the manufacturing companies, and bidding invitations were mailed. Standard Steel Works of North Kansas City, Missouri, made the sale. This firm has advertised in the MUNICIPAL INDEX regularly for years.

City Manager Hobbs writes, "We also use THE AMERICAN CITY each month in our work as a reservoir of ideas from other cities. It helps us acquire factual data and convincing reasons why we should enter into a certain project or take steps to purchase a specialized piece of equipment."

You too can receive invitations to bid if you, like Standard Steel Works, invest your advertising dollars in the MUNICIPAL INDEX and THE AMERICAN CITY.

THE AMERICAN CITY · MUNICIPAL INDEX
470 Fourth Avenue, New York 16, N. Y.

The American City Professional Service Directory

ALBRIGHT & FRIEL, INC.
Consulting Engineers
Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators & Power Plants, Industrial Building, City Planning, Laboratory, Reports, Valuations.
121 South Broad St. Philadelphia 7

ALLEN & HOSHALL
Consulting Engineers
Mechanical—Civil—Electrical
Municipal Improvements
65 McCall Place
MEMPHIS, TENNESSEE

ALVORD, BURDICK & HOWSON
ENGINEERS
Water Works — Sewage Disposal
Water Purification — Drainage
Flood Relief — Appraisals
Sewerage — Power Generation
20 North Wacker Drive, Chicago 6, Ill.

YOUR CARD
could be set in this space at reasonable cost
If you are interested, write
THE AMERICAN CITY
470 Fourth Ave., New York 16,
or 2329 Daily News Building
Chicago 6, Ill.

Abrams Aerial Survey Corporation
Over one-third century of Experience
Complete facilities for all aerial photography, processing, photogrammetric drafting and reproduction.
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How D8s "deliver the goods" for Pickering Lumber Corp.

Fifty-one-year-old outfit relies on Caterpillar Diesel Tractors, Motor Graders and Power for big production

Left to right: Fred Houck, Camp Foreman, and W. A. Meisner, Logging Superintendent, Pickering Lumber Corp., Standard, Calif.

A Cat D8 Tractor with No. 8A Bulldozer pioneering a skid road in rough going. The D8's horsepower, weight, traction and blade capacity are *matched* for top performance.

You'll see a lot of "yellow paint" in the equipment line-up of the Pickering Lumber Corp., Standard, Calif. This 51-year-old logging outfit operates 19 CAT* Diesel Tractors, two Cat Motor Graders, five Cat Engines and Electric Sets. For the past 11 years, it has been logging from Small Creek Camp, taking sugar pine, Ponderosa pine and mixed timber from its own and Forest Service stands. It has 71 miles of railroad. Its mill cuts an average of 75 million bd. ft. per year.

Pickering keeps its D8s busy pioneering skid roads, building main haul roads and railroad grade, clearing landings, skidding and on other routine woods jobs. Six of the D8s are equipped with bulldozers. Typical building production: 12 miles of main road in a year, plus skid roads at the rate of a mile a day, etc. How are the D8s doing? Here's a firsthand report from Logging Super W. A. Meisner and Camp Foreman Fred Houck: "We operate in some of the roughest country and also some of the best. Our tractors give us dependable service. Operators like them. As we are now operating 19 D8s, you can see they must really deliver the goods."

No matter what the size of your show, you'll find it pays to put Caterpillar-built equipment to work for you. These rugged rigs are built to do *more* work at *lower* cost with *less* down time than any competitive unit. Ask your Caterpillar Dealer about the new 150-HP D8 with the new oil-type clutch, which operates longer between adjustments and replacement than the conventional dry clutch. He's nearby for information and service. Name the date—he'll demonstrate!

Caterpillar Tractor Co., San Leandro, Calif.; Peoria, Ill., U.S.A.

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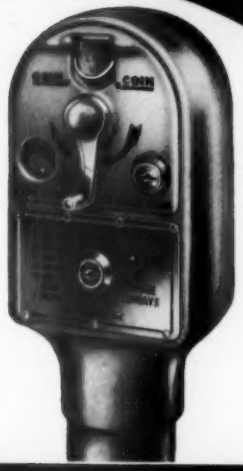

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Two views of midwestern chlorinating room showing typical use of W&T equipment to suit a specific need.

To Every Part Its Proper Place...

How well chlorination equipment does its job depends not only on proper design but on the selection of the right parts and materials for every specific purpose.

The W&T equipment in the above installation is still giving good service after fifteen years. Every part in the equipment shown was designed specifically to meet a particular need. Mechanical diaphragms, first used by W&T in 1913, are here used for accurate control in the ammoniators. Puncture proof water diaphragms provide visibility and accessibility of control parts in the chlorinators. Both orifice and manometer type meters, and rotameters (furnished in W&T equipment as early as 1917), are employed here as best suiting the purpose for which each was intended.

Since 1913, W&T research has consistently sought out new designs, principles, and materials. Every new development is placed under rigid field tests to prove it can meet the exacting standards and practical limitations that dependable and economical chlorination demands.

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